

MARCH 1926

No. 242

Monthly

A Reference for Buyers

HITCHCOCK'S
**MACHINE
TOOL
BLUE BOOK**

25,000

Controlled Circulation

Published By

308 So. DEARBORN ST.
CHICAGO



We build both alternating
and direct current motors
with ball bearings, roller
bearings or sleeve bearings.

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, Ohio

Branches:

Boston

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Pittsburgh

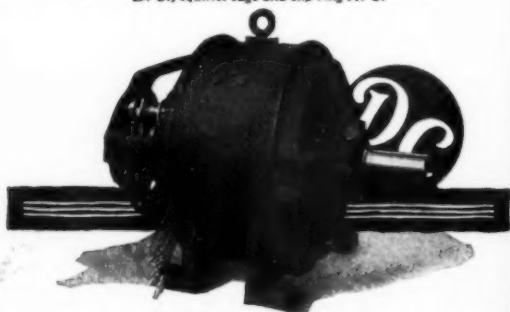
Cincinnati

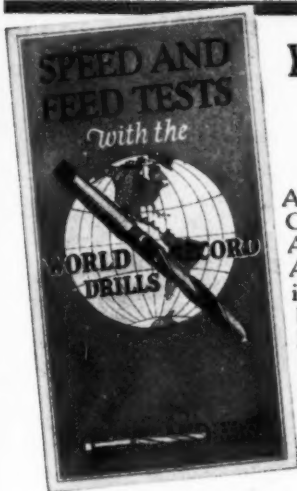
Detroit

Chicago

Birmingham, Ala.

*We specialize in motors, sizes 1/2 to 250 h. p. constant and adjustable speed
D. C.; squirrel cage and slip ring A. C.*





You Ought to Have This Booklet!

At the Atlantic City Convention of the American Railway Association, Mechanical Division, June 11-18, 1924, Cle-Forge High Speed Drills established a new world's drilling record — beating their own record set up in 1923.

This booklet gives a complete summary of the Atlantic City tests and is a valuable guide to the shopman interested in finding out just what high speed drills can and will do.

A copy will be sent you—gladly and without charge—for the asking

The **CLEVELAND** TWIST DRILL
COMPANY
CLEVELAND
NEW YORK CHICAGO LONDON

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

Manufacturers, also, of

Carbon and High Speed Drills for every purpose; "Mezzo" Super-Carbon Drills; Hand, Jobbers' and Shell Reamers; "Peerless" High Speed Reamers; "Paradox" Adjustable Reamers; "Quick-Set" Reamers; Chucking Reamers for Turret Lathes; Counterbores; Countersinks; Sockets; End Mills; and the "Ezy-Out" Screw Extractors.

CLE-FORGE

TRADE MARK REG. U. S. PAT. OFF.

High Production Features

Selective Dial Feed

Rail Clamping Device

Instantaneous Rail Lift

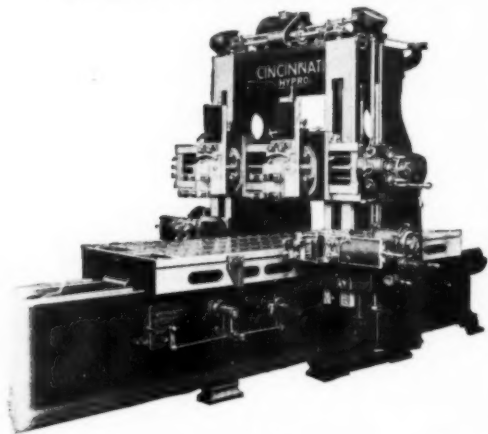
Rapid Power Traverse

Forced Lubrication

Combination Steel

Herring Bone and Spur Gear Drive

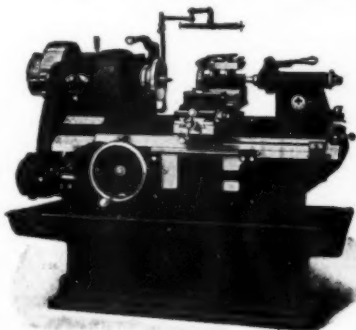
Long Inverted Dovetail Down-Slide



The Cincinnati Planer Co.

Cincinnati, Ohio

The LeBLOND Multi-Cut Lathe



LeBlond No. 9 Multi-Cut Lathe

The Multi-Cut is a semi-automatic lathe adapted to combined turning and facing cuts using multiple tools. The set-up is very simple and quickly accomplished, there being no cams to consider. The machine can therefore be used profitably on relatively small lots.

Our complete catalog describes the several sizes in detail.

We will gladly send it to interested parties.

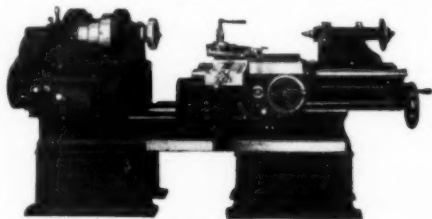
**THE R. K. LeBLOND MACHINE
TOOL COMPANY**

CINCINNATI,

OHIO

Rahn-Larmon 18"/36" Extension Bed Gap Lathe

A lathe of so wide a range that it reduces to a minimum the amount of equipment required, as well as operating time, in jobbing shops, railroad shops, or wherever there is a large variety of work to be done.



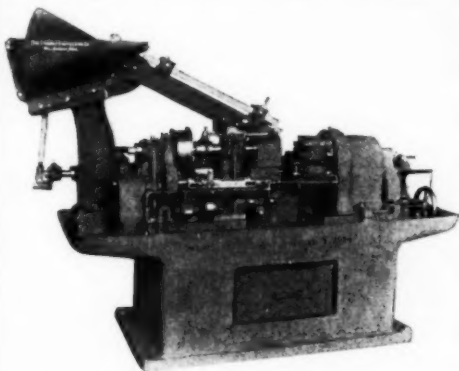
The Lathe with the Wide Range

There is hardly a reasonable limit to the work that can be done on this modern Extension Gap Lathe. It enables the operator at all times to have a lathe ready for any job, without tearing down and setting up.

And not only is it versatile, but it is a real lathe on every job. It is so sturdily constructed that it absorbs the vibrations of the heaviest cuts. And as for convenience—that's its strong point. Arranged for belt or a. c. or d. c. motor drive. Also made in 22"/40" and 28"/50" sizes.

Get in touch with us. Find out what this lathe will do for you and how it saves costs. Glad to go into the matter with you fully, without obligating you in any way.

The Rahn-Larmon Company
Cincinnati, Ohio



"This is Production"

**2800 Pointed and Threaded
 $\frac{1}{2}$ " Bolts Per Hour—
One Operator!**

WHEN USING

**Four Economy Automatic Combined
Pointing and Threading Machines.**

**Capacity $\frac{1}{4}$ "x1" to $\frac{3}{4}$ "x5 $\frac{1}{2}$ "
Bolt and Cap Screws.**

**The Economy Engineering Company
WILLOUGHBY, OHIO**

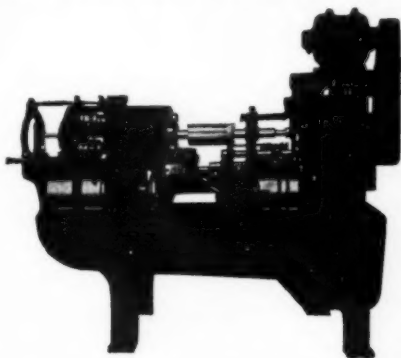
Not Everybody Knows

that Hitchcock's Machine Tool Blue Book reaches more of the big manufacturers throughout the country—manufacturers who are especially interested in production tools—than all the other machine tool publications combined.

Yet such is a fact. And it is a fact that should be in the minds of all those who make production machines, and who want those who use them to know that they make them.

Memories are short. Out of sight, out of mind. And it costs so little to remind all of the larger manufacturers monthly by way of the Blue Book.

You, too, Can Save on Your Bar Stock Parts



If you are interested in producing your bar stock parts at lower costs find out what the Model C, Five Spindle, Acme Automatic Screw Machine can do for you. It's built in 3 sizes:— $9/16$ ", 1", $1\frac{5}{8}$ ".

This new Acme has already saved thousands of dollars for representative concerns making parts from bar stock—and on hundreds of different parts.

Send B/P or Sample for Production Speeds on Your Work.

Address Dept. C. S.

The National Acme Co.
Cleveland, Ohio

New York

Detroit

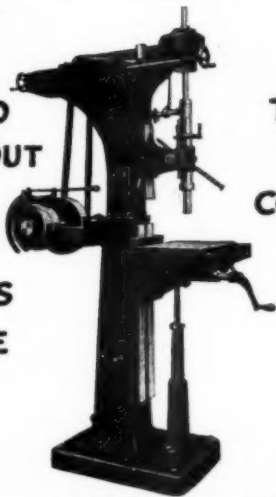
Chicago

\$

\$

GET
THE
Avey

TO DO
WITHOUT
AN
AVEY
COSTS
MORE



THAN
IT
COSTS
TO
BUY
IT

\$

\$

THE AVEY DRILLING
MACHINE CO.
CINCINNATI
OHIO

FOOTBURT



A Single Spindle Footburt Sipp Sensitive Drill

**Made in three
sizes of single
and multiple
spindle models**

More holes with this machine

Why? Because you can change speeds in two seconds or belts in ten seconds—because the automatic idlers keep the belt pulling to capacity at all times—because the full ball bearing equipment and accurate machining gives a smooth, fast cut.

Write for No. 650 Folders

The Foote-Burt Company, Cleveland, O.

FOOTBURT

Cutter and Tool Grinders

For All Classes of Work

No. 12
Cutter and Tool
Grinder



The Nos. 10, 11 and 12 give a range of sizes that will take care of any kind of cutter and tool work as well as light cylindrical grinding.

Let us recommend the proper sizes for your work

LANDIS TOOL COMPANY

Waynesboro, Pa.

New York Office: 30 Church Street Detroit Office: 5928 Second Blvd.
Chicago Office: 618 W. Washington Blvd.



Motor Driven No. 1 Universal Tool Grinder

Grand Rapids Universal Cutter and Tool Grinder

**With Self-Contained Motor Drive,
Eliminating All Overhead Work.**

An ideal machine for the shop using cutters and reamers, for whom our larger machines would be an extravagance.

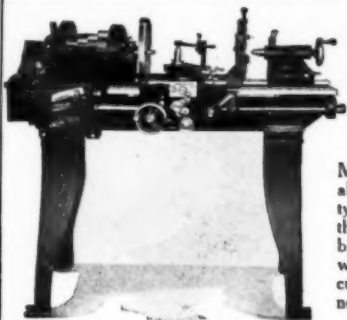
Any work within the capacity of the machine can be handled with maximum convenience.

BULLETIN ON REQUEST

Gallmeyer & Livingston Company

342 Straight Ave., S. W.

GRAND RAPIDS, MICHIGAN, U. S. A.



Another Sidney Lathe

Our 11" x 4"
Medium Pattern,
all geared head
type. It is up to
the minute with
built-in features
which insure ac-
curacy and eco-
nomical service.

*Write for catalog and prices on the complete
line of Sidney Lathes. Address Dept. 1801*

The Sidney Machine Tool Co.
Sidney, Ohio

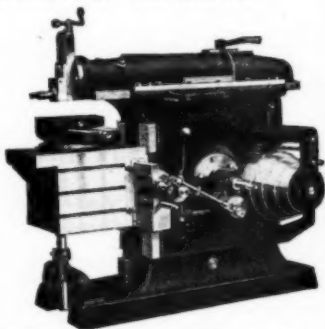


SHAPERS

12", 14", 16"
Plain Crank.
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through Speed
Box.

Belt Shifter
Regular Equip-
ment All Cone
Driven Shapers.

32" Back Gear-
ed Crank, Sin-
gle Pulley
Drive.



The Smith & Mills Co., Cincinnati, O., U.S.A.



Rhodes Shaper & Slotter

Within the Reach of Every Shop
And Good Enough for the Best

7 in.
Shaper
Stroke



3½ in.
Slotter
Stroke

With the essential features of larger machines, it is especially designed for the quick and accurate handling of small work.

There is nothing better for making tools, dies, models, etc., and for all shaping and slotting within the capacities shown above.

Furnished separate in floor and bench type, and in combination in the floor type only, at a purchase price so low that any shop can profitably afford to own it.

*Ask your dealer or write for
CATALOG H22*

The Rhodes Mfg. Company

984 Park Road, :: Hartford, Conn.

— SHAPERS — RHODES — SLOTTERS —

Cleveland Open Side Planers

26" to 72"

No matter what the Enterprise or Industry, if planing is a problem CLEVELAND OPEN SIDE PLANERS will solve it for you. Their Range, Accuracy and Producing Qualities will save you time and money.

25 years of experience and over 1060 installations.

Self oiling bushings throughout the Drive;
all steel Gears; Auto-
matic Trip to Rail
Elevating Mechanism;
Improved Head Clamp



Send for descriptive circular

The Cleveland Planer Co., 3148 Superior Avenue,
CLEVELAND, OHIO
Established in 1900

ARMSTRONG COMPLETE LINE OF Ratchet Drills

Packer, for rough service; *Standard*, for general use; *Weston*, extra heavy; *Universal* and *Short Ratchet*.



*Write
for
our
Ratchet
Drill
Catalog*

The Armstrong Universal

The "Universal," shown above, may be used in awkward corners and confined spaces where other Ratchets are useless. Often pays for itself on a single job. Simplest, strongest, fastest.



Armstrong Bros. Tool Co.

"The Tool Holder People"

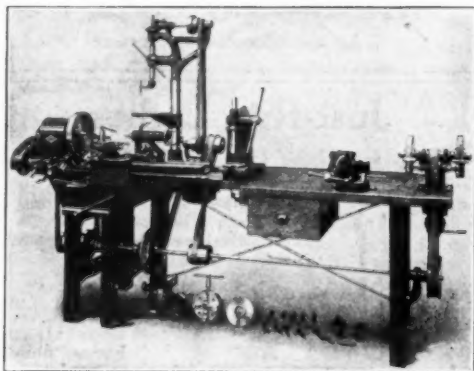
308 N. Francisco Ave., Chicago, U. S. A.

FOR SALE! Complete Shop!

Every item of equipment brand-new!

Complete lay-out for Garage, Repair Shop, Experimental Laboratory, Maintenance Department, Tool Room, or Vocational School.

Equipment consists of 11" Quick-change Lathe, 16" Gap, fitted complete with Chuck, 5 Tools and 4 Lathe-dogs; 10" Drill Press complete with $\frac{1}{2}$ " Chuck; large Arbor Press; Swivel-base Machinists' Vise; and Grinder with fine and coarse wheels. All machines mounted on substantial work bench with hardwood top 7' long, 28" wide. Individual drive through $\frac{1}{2}$ H. P. Motor mounted as shown.



If machines were purchased and installed separately, outfit would cost over \$600. Our price complete, \$488 f.o.b. cars Cincinnati. Weight, crated, 1000 lbs.

Artisan Manufacturing Company

837 West Sixth St., Cincinnati, Ohio.

The name

"Hardinge"

Stamped on any piece of machinery is a guarantee of quality and workmanship. This is particularly noticeable in the manufacture of

Collets

where so often extreme accuracy is required. When you need something special in this line that no other firm will touch, try—

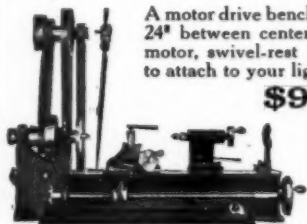
Hardinge Brothers, Inc.

4149 E. Ravenswood Ave., Chicago, Ill.

Collet Specialists for thirty years.

Just-Rite Lathes

Made in Sizes from 10-in. to 20-in.



A motor drive bench lathe, 10" swing, 24" between centers, complete with motor, swivel-rest and pan, ready to attach to your light socket.

\$98

JUST-RITE
for turning,
boring, mill-
ing and drill-
ing (not screw
cutting).

Order one by express. Weight, 230 lbs.

A. V. Carroll Machine Tool Co., Norwood,
Cincinnati, O.

Pedrick Lathe Boring Bars



There are many times when you could profitably use one of your lathes for boring—if you only had the proper appliances at hand.

We can equip you for such work with one of our Lathe Boring Bars. They are made in diameters from 2½" to 6" and various lengths, with a large assortment of cutterheads to meet miscellaneous requirements.

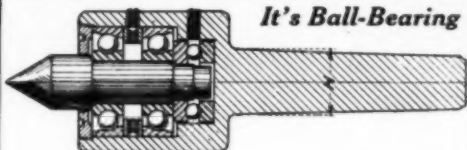
The lathe provides the power, and each bar has a two-change constant feed, hand-controlled or automatic. The bar is rigidly held and is easily taken down and reset without changing the alignment.

Put your boring problems up to us. We have all kinds of new boring machines, from our Standard Portable Cylinder Boring Bar to our new Floor Boring Machines.

Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia, Pa.

Builders of Portable Cylinder Boring Bars, Crank Pin Turners,
Portable Millers, Pipe Benders, etc.



It's Ball-Bearing

The Improved **"ALIVE" Tail Stock Center**

Here is the modern way to eliminate tailstock center troubles—burnt centers, enlarged holes, inaccurate work. The Norma Precision Bearings in this tailstock center carry both radial and thrust loads, and maintain accuracy while permitting of the highest speed the tool will stand.

STOCKED IN EIGHT STANDARD SIZES.

Special sizes made to meet special requirements.

Write for Bulletin on Prices and Specifications

**Kell Manufacturing Co., 109 Tichenor St.,
NEWARK, N. J.**

E-Z THREAD DIAL E-Z

New device
lowers cost
of thread
cutting on
engine lathes.

For all
size lathes.

E-Z to
attach.

Send for
folder.



Eliminates
stopping or
reversing the
lathe.

Saves cost of
backing belt.

Saves power
to drive same.

E-Z to use.

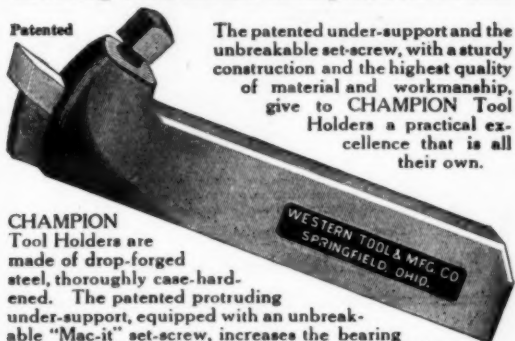
Sent on thirty
days' trial.

**JAMES M. COLVEN, 20 Wolfe Street,
Yonkers, N. Y.**

Champion Tool Holders

Turning Tools — Boring Tools — Planer Tools
Cutting-Off Tools—Threading Tools
Grooving Tools and the Champion Drill Holder

Patented



The patented under-support and the unbreakable set-screw, with a sturdy construction and the highest quality of material and workmanship, give to CHAMPION Tool Holders a practical excellence that is all their own.

CHAMPION

Tool Holders are made of drop-forged steel, thoroughly case-hardened. The patented protruding under-support, equipped with an unbreakable "Mac-it" set-screw, increases the bearing for the cutter 40 to 70 per cent, with a corresponding increase in cutter economy. It also absorbs the heat from the cutter and permits heavier cuts, with less breakage.

Patented



Champion Boring Tool

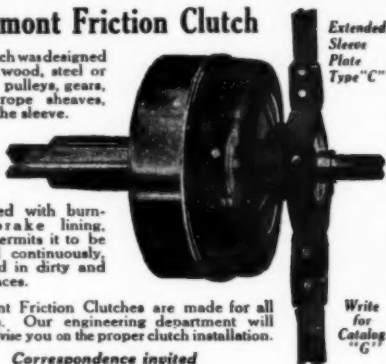
This tool is indispensable for inside threading and boring. Takes any length of cutter, which may be used down to short lengths. Cutters, drills, reamers, taps and many other tools can be used in this Holder.

Write for new Catalog and Price List

The Western Tool & Mfg. Co.
Springfield, Ohio

Edgemont Friction Clutch

This clutch was designed to drive wood, steel or cast iron pulleys, gears, drums, rope sheaves, etc., on the sleeve.



*Extended
Sleeve
Plate
Type "C"*

It is lined with burn-proof brake lining, which permits it to be operated continuously, and used in dirty and dusty places.

Edgemont Friction Clutches are made for all purposes. Our engineering department will gladly advise you on the proper clutch installation.

Correspondence invited

*Write
for
Catalog
"G"*

Edgemont Machine Co., Inc., DAYTON, OHIO

"The Handiest Racks In The Shop"



You manufacture small articles from round bar stock—on a turret lathe, for instance. Where do you keep the stock? Is it handy? The quick, easy, time-saving way is to have two or three of —

"The Handiest Racks"

—filled with bar stock, where you can lean across and pick it up without delay. They save time and space, and keep stock neatly piled and assorted.

Shipped promptly on trial

Wm. S. Yohe Supply Co.
503 Mahoning Road, N. E., Canton, Ohio

Improved E-Z-Set Boring Tool



Large boring capacity.
Rigid, positive adjustment.
Actuated by worm.
Made in three sizes.
Can't be beat; a trial will prove it.

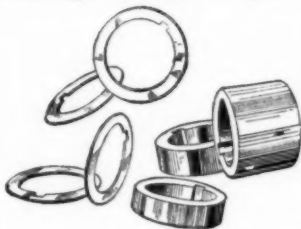
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M-P Three Tool Turret



With this Three Tool
Turret, a screw ma-
chine has nothing on
your lathe.

Milling Machine Spacing Washers



Don't

let your men cut
paper washers
for your milling
machines. You
can get steel .003,
.004, .005, .006,
and .010 thick
at \$3.00 per C.

We also make
collars from $\frac{1}{8}$ "
to 3" long.

Necessary Shop Accessories

Manufactured by

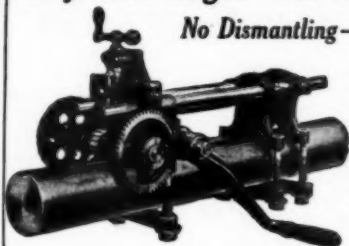
The Maxwell Products Co.

Ottawa & Indiana Ave.,

Cleveland, Ohio

Keyseats Right On the Spot

No Dismantling—No Fuss



**The BURR
Portable
Keyseater**

Cuts keyways
up to 12" long,
in shafts up to 5"
diam., anywhere,
in any position.

Have one on hand for your next emergency—the cost is often saved on a single job. The seven sizes are *quick and accurate*. Hand or power driven. Over 9,000 in use. *Order yours today and save money!*

JOHN T. BURR & SON

422 Kent Ave., Brooklyn, N. Y.

What More Is There

in a keyseat than having parallel sides, a uniform width and depth, and being parallel to the axis of the bore? This tool mills that kind of keyseat. It is used in the drill press.

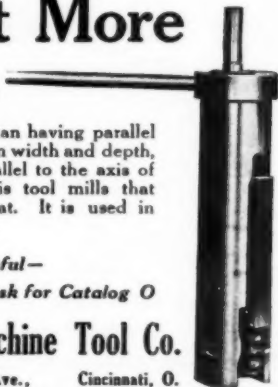
Don't be bashful—

Ask for Catalog O

National Machine Tool Co.

2268 Spring Grove Ave.,

Cincinnati, O.



Lower Your Keyseating Costs

With the NEW Catlin No. 1



*Rapid
Simple
Durable
Efficient
Accurate
Economical*

The Catlin Keyseaters are popular because they are profitable—they have made good in machine shops of every size, as well as automobile plants, government shops, navy yards and many foreign factories.

Nos. 0, 1 and 8 Keyseaters have the crank motion, while all other sizes have the rack and pinion drive.

All Catlins are thoroughly efficient, and help to lower shop costs. The picture shows our No. 1 Keyseater.

Let us send you the large folder, which gives full details of construction and operation, and also some

Very Interesting Production Records!

Chattanooga Machinery Company

2401 Bennett Ave., CHATTANOOGA, TENN.

SAVE CUTTING OIL

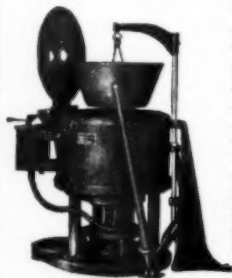


**TOLHURST Chip
Wringers** reclaim
6 to 15 gallons per
load and handle
three or four
loads an hour.

Write!

Tolhurst Machine Works
Troy, New York

There's Less Oil to Buy—



When you reclaim 90% of the oil
ordinarily carried away on chips
and shavings, with the CURTIS

Centrifugal Oil Extractor

The results amaze those who are
not acquainted with the big
economy of the Curtis.

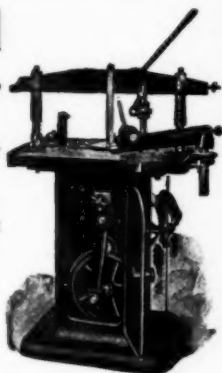
Two sizes, belt or motor driven.
The illustration shows our smaller
size, with G. E. special motor
on spindle, and with hoist. It
holds about 100 lbs. of chips,
from which the average saving
from 20 installations was 2.17
gallons of oil per load.

No. 250—Cap. $\frac{3}{4}$ Bushel

Don't miss this investment
Write for Catalog and prices

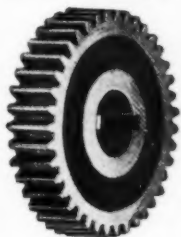
The Leon J. Barrett Co., Worcester,
Massachusetts
Successor to Curtis Machine Co.

The Economical Keyseater



The DAVIS is
Built in Two Sizes:
No. 1 and
No. 2

And
The
Job



The Cutter



In sizes from
1/16 to 1-inch

Cuts key-
ways in pul-
leys, gearblanks,
bell cranks, crank
handles, etc.; does
slotting & oil grooving.

Write for folder, with table of cutting time

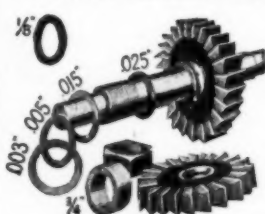
Davis Keyseater Company

255½ Mill Street,

Rochester, N. Y., U. S. A.

Steel Spacing Washers—

Made of a good grade of Cold Rolled Strip Steel, also known as Shim Steel



Stock sizes for arbors of following diameters: $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, 1, $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{3}{8}$, $1\frac{1}{2}$, $1\frac{3}{4}$, $1\frac{7}{8}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4 in. and larger.

Stock thicknesses: .002, .003, .004, .005, .006, .007, .008, .010, .012, .015, .020, .025, .032, .047, .063, .093 and .125 inch.

Other thicknesses up to 3.000" made to order, with keyways if so ordered.

Ask us to send samples; you'll like them

Detroit Stamping Company
3443 West Fort St., Detroit, Mich.

Save Time Setting Gang Milling Cutters

Eliminate
Thin
Washers



Hardened
and
Ground

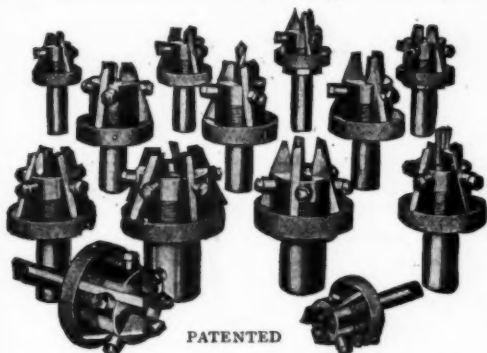
PATENTED

"Wear-Ever" Adjustable Spacing Collars permit setting cutters to the thousandth part of an inch without removing from the arbor.

Stock sizes for $\frac{3}{4}$ " to $2\frac{1}{2}$ " arbors, sent on approval
They are adjustable in 12 steps of $\frac{2}{1000}$ inches

SCULLY-JONES & CO. TOOL DIVISION
13th and Robey Streets CHICAGO, ILL.

Ideal for Many Operations



Genesee Adjustable Hollow Mills

SUPERIOR for finishing forgings, castings, etc. They are easily and quickly adjusted to the 1000th of an inch, and are designed to utilize machines to their full capacity. When worn, the blades can be replaced at very small cost.

EASILY FITTED with drills and reamers, have formed blades, etc. The blades can be ground any angle to point work and turn short tapers. They cut up to 15" a minute in steel, are stronger than solid tools, and cannot change in size.

SEVEN SIZES cover all work from $\frac{1}{8}$ " to 2". The Genesee is now made in six styles, from the heavy roughing Style "B" to the accurate finishing Style "F." We also make Style "N" Mills for all Brown & Sharpe automatics. We can make special sizes and styles to your order, at prices that mean real economy.

As all round cost reducers Genesee Mills are a revelation to users everywhere. We invite your correspondence.

Genesee Manufacturing Co., Inc.
Rochester, N. Y., U. S. A.

Manufacturers of Genesee Rapid Production Tools.

Est. 1908

"Bridgebilt" Factory Seating and Tool Racks

A diversified line to meet requirements of every branch of industry.

**The Bridgebilt line
will give long and
satisfactory service**

*For illustrated price list
and discounts write—*

**The Chicago Wire
Chair Co.**

619 No. LaSalle St., Chicago, Ill.

No. 1010-SWS



Vanderbeek Universal Joints



—represent the practical refinements of 25 years experience in manufacturing Universal Joints. All parts are generous sized, fully protected against dirt, and are practically self-oiling. Exceptionally strong, they transmit full power up to 70°.

Vanderbeek Joints are in daily use on thousands of machines.

*Write today for our
Descriptive Catalog.*

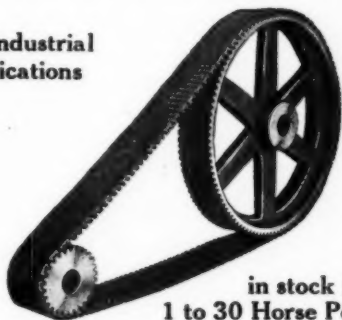
American Tool Works, Inc.
Hartford, Conn., U. S. A.





***Standardized
Renold-Boston
Silent Chain Drives!***

**for industrial
applications**



**in stock from
1 to 30 Horse Power**

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BOSTON GEAR WORKS SALES CO.
Norfolk Downs, Mass.

BOSTON NEW YORK PHILADELPHIA CLEVELAND CHICAGO
Service Stations in Principal Cities

Grinds or Polishes



Belt Grinder



Disc Grinder

MUCH faster and more accurate than a wheel for the flat grinding of metal, fibre, wood, etc. SYRACUSE Disc and Belt Grinders have many uses in every shop. Portable, motor driven from lamp socket, they save steps and extra handling.

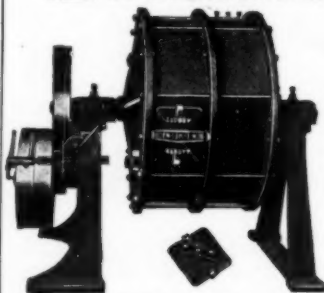
Write for bulletin

PORTER-CABLE

**MACHINE
COMPANY**

Salina St., Syracuse, N. Y.

Abbott Burnishing Barrel And Carbonized Steel Ball Process



**Let us
burnish**

samples of your small metal parts, and furnish time and cost estimates.

Quality is high, and cost is bed-rock.

*Send us
your samples*

THE ABBOTT BALL COMPANY
Elmwood District, Hartford, Conn.



PEERLESS SURFACING MACHINES

for

*Grinding and
Finishing
FLAT PARTS*

*Take
a
rapid
cut
and
leave
a
perfect,
straight-
grained
finish*

Also made in horizontal models. Write for large folder.

PEERLESS SURFACING MACHINE CO., Inc.
TROY, N. Y.

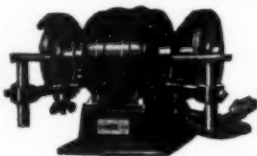
In Canada: A. R. WILLIAMS MACHINERY CO., Toronto

Competition—

Makes Efficient Tools a Necessity

—and the—

Sharpest Tools are the Most Efficient



THE BODINE Portable Electric TOOL GRINDER

Is the one machine which has correctly solved the problem of keeping tools sharp.

THE BODINE isn't "just a grinder." It is a highly specialized tool for increasing profits by increasing production. It makes it so easy to keep the cutting edges of tools at maximum efficiency.

Write for a copy of "Eight Outstanding Advantages."

The Bodine Electric Company

2256 West Ohio St., Chicago, Ill.

"D & W" Demagnetizers



Simple and
Dependable

Built in
two separate
types, for use
on alternating
or direct
current



Their construction is unique. A rigid continuous "U" shaped core made of the highest grade laminated electrical steel is energized by two stationary coils, thru which alternating current is passed. Construction is similar for d. c. machine, only in addition it contains a small converter. *Write for the circular.*

J. & H. Electric Co., 161 Clifford St.,
Providence, R. I.

Don't Forget This

Precision Truing Tools

will cut down your cost of truing grinding wheels.

The wheel is trued more quickly—the wheel pores are opened up better, hence will grind more pieces before requiring truing again.

THE SAVING IS ALL PROFIT TO YOU

WHEELS

Our truing wheels are especially made for truing and are superior for this work.

We also make small grinding wheels, 6-inch diameter and less.

The Precision Truing Machine & Tool Co.
CINCINNATI, OHIO

SIMPLEX-M Abrasive Band Grinders



**For Roughing, Smoothing and
Fine Finishing**

Produces Straight Grain
Surface and Sharp Edges

Used on Metals,
Woods and Compositions

Send for literature of various styles and sizes

Walls Sales Corp., 96 Warren St., N. Y.



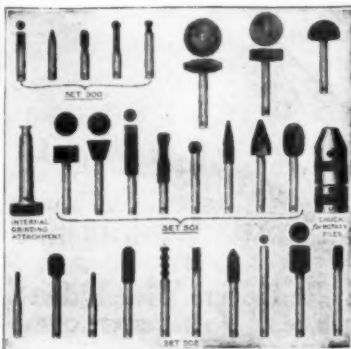
Strand Rotary Files

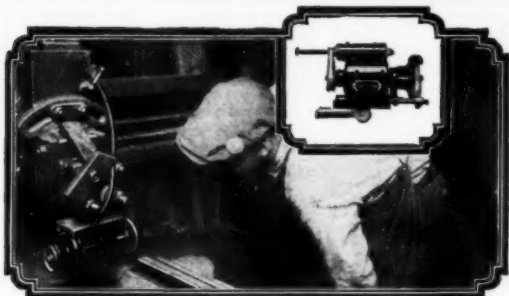
Used with Strand
Flexible Shaft
Machines. Are
giving excellent
service.

Write for Catalog

**N. A. Strand & Co.
5001 No. Lincoln St.
CHICAGO**

HIGH SPEED HAND CUT ROTARY FILES





Helping Willys-Overland Take America Off Its Feet

IN THE Willys-Overland plant at Toledo, Dumore grinders play an important part. How well they fulfill every demand made of them—how accurate and adaptable they are for all varieties of grinding work, is convincingly illustrated in the hood panel forming—die grinding job pictured above. And when you consider that this is but one of many difficult operations successfully handled by Dumore grinders at the Willys-Overland works, you'll agree that these efficient tools assist materially in "taking America off its feet."

It is reasonable to assume that what Dumore grinders can do for Willys-Overland they can do for any other manufacturer. Six distinct styles of Dumore grinders, each with individual speed ranges, provide a grinder with the correct cutting speed for any grinding need. Dynamically balanced armatures and selected ball bearings in Dumore grinder motors eliminate vibration—permitting maintenance of grinding limits as close as .0001, without taper, bell-mouth or chatter marks. Operating on alternating or direct current, they are especially useful in shops supplied with two varieties of power current. Portable, they save the cost of tearing down expensive set-ups.

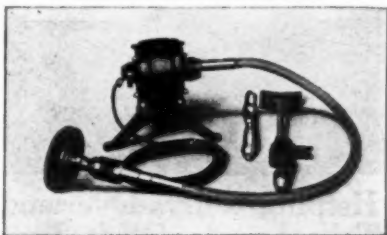
Why not find out what they can do for you? Our new catalog tells an interesting story of Dumore grinders and their uses. By asking for it *today* you'll get it quicker than by delaying until tomorrow. Write now!

Wisconsin Electric Co., 43 Sixteenth St., Racine, Wis.

DUMORE HIGH SPEED GRINDERS

The Whirlwind Buffer and Grinder

Will cut the cost on any unhandy
grinding or polishing job



Send for our latest bulletin

Stow Flexible Shaft Co., 3454 Ludlow St.,
Philadelphia, Pa.

The Best Since 1876

Thompson Universal Grinder

Self-contained and motor driven,
this improved Grinder combines
efficient means for the rapid and
accurate production of every grinding
operation required in a machine shop.

Capacity 10"x36"

*Write for
Illustrated
Folder*

**The Thompson
Grinder Co.**
Springfield, Ohio



La Salle Grinders

**American Style C T A
For Dry Grinding Only**



Unexcelled as a dry grinder for twist drills. Extra large drill holder has capacity from 1" to 3½".

American Style W T A is arranged for both wet and dry grinding.

All American Grinders are now equipped to handle taper shank drills.

No. 1 Plain and Surface Grinder

(Micrometer Adjustment)

Grinding wheels.....	8"x1"
Between wheels.....	15"
Height to spindle center.....	40"
Table surface.....	8"x14"

Has vertical travel of 12" on guides, ¾" by micrometer, and may be raised to within 2" of spindle center. Wheel grinds to center of a surface 9" wide.

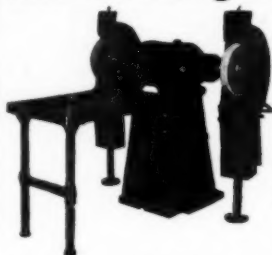


Let us know your grinding requirements

LaSalle Tool Company

LaSalle, Illinois, U. S. A.

CISCO Polishing, Buffing and Grinding Lathe For large production



Direct motor driven, self contained and ball bearing. Vital parts protected from dust and dirt. Push button control, quick-acting brake, a cool motor with frequency changer, perfect oiling and entire absence of vibration are important factors in turning out large quantities of work.

*Write for
full description*

The Cisco Machine Tool Company
1700 Elmore St., Cincinnati, Ohio

FEDERAL **DIAL COMPARATOR**

- CAPACITY 6" -



With Indicator
Graduated .001"

\$33.50

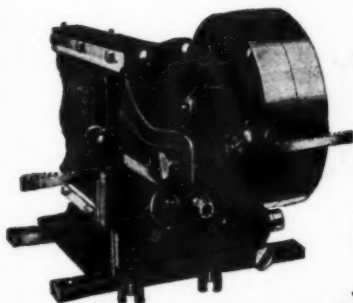
With Indicator
Graduated .0001"

\$48.50

SEND FOR COMPLETE CATALOG

Federal Products Corporation
Elbow & Chestnut Sts., Providence, R. I.

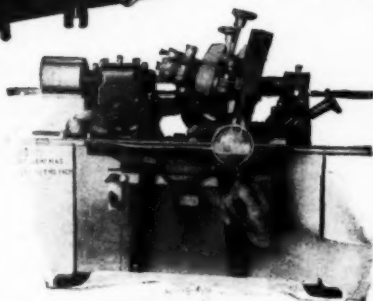
A SHARP SAW for 5¢



Model K-2
IN ONE
OPERATION
Files and Sets
Medium, Spring
or
Soft Tempered
BAND SAWS

Fisher Body...have...28
Simonds Saw...have...22
Gen'l Electric...have...25

Model A-2
Sharpens and
Salvages
HARD
Medium
or Soft
Tempered
BAND
SAWS



THAT IS WHY

20 concerns each have over 15 of these machines

**CAN YOU SHARPEN A SAW
FOR 5 CENTS? THESE MACHINES WILL**

THE WARDWELL MFG. CO.

Specialty Manufacturers of the largest line of Saw Filers made in the U. S. A.
108 Hamilton Ave., Cleveland, Ohio

Towsley Trucks PAY 500%

Every Year On
Their Cost Price



Glad to tell
you how

TOWSLEY TRUCKS

repay their
cost every
two to three
months.

Every style
for every
need.

Write for facts and figures; you'll be glad you did

**John T. Towsley Mfg. Co., Cincinnati,
Ohio**

Giant "CanTon" Carries Three Tons



The "CanTon" Portable Crane, Hoist and Truck

makes it easy for one
man to handle machin-
ery and castings which
ordinarily require the
combined efforts of 6
to 10 men. 'Nuff sed.


There are several sizes,
but any one of them
will soon earn its cost.
Just drop us a line and

Ask for Bulletin E-8

CANTON FOUNDRY & MACHINE CO., Canton, Ohio

New York Office: 203 East 15th Street, Second Floor

TRIBLOC CHAIN HOISTS



Good tools for better work

Making the worker's job more agreeable shows a favorable result on production cost sheets.

Get this result in your shop by transferring the costly drudgery of load lifting to sturdy Tribloc Chain Hoists. Proper load lifting devices keep your mechanics at the job they're paid to do.

We will gladly tell you how Triblocs can be used to advantage in your shop—making more profitable the effort of hard-to-get mechanics.

Send for Catalog 7-B

Ford Chain Block Co.
2nd and Diamond Sts.,
Philadelphia, Pa.

Round



Economy Screws

The "Economy" are real economy screws, because it always pays to use the best. Carefully made of superior material, with heads free from burrs, they are especially suitable for use in screw machines.

Oval



Can ship promptly all standard sizes, iron or brass, with four styles of heads. If you cannot get "Economy" Screws from your jobber, write us, giving nearest jobber's name and address.

Economy Screw Corp'n

5213 Ravenswood Ave., Chicago, Ill.

Flat



Fillister



*How would
you like—*

to tap small holes as easily as you drill them; to tap them 2 or 3 times faster than usual; to wear out the small taps you are now breaking?

The Ettco High Speed Tapping Attachment usually increases output 100%. When a gun tap is used the increase is as high as 300%.

*Try one for 10 days—
if you can then spare
it, send it back.*

Ettco

Try one
for 10
days



Eastern Tube & Tool Co.
600 Johnson Ave., Brooklyn, N.Y.

For Driving Short Screws At Lowest Cost



The
Reynolds
No. 1
Special

The Only Automatic Magazine-Fed Machine

That drives short
screws and those
with short bodies
and large heads

Just keep the hopper
filled—no handling of
screws beyond that
—a boy or girl can
operate it.

For a dozen years our Automatic MAGAZINE-FED Machines have been driving nearly every kind of screws for up-to-date concerns everywhere, at a saving of 65% to 85%.

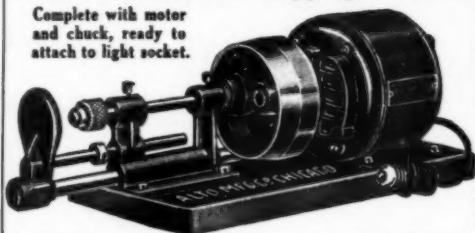
Our No. 1 Special, shown in the picture, which has been in use in many plants for over three years, completes our line of MAGAZINE-FED Machines, by handling screws with short bodies and large heads. It magazines and drives screws from No. 4 to No. 10, up to $\frac{1}{2}$ " long, to the center of a 14" circle.

Send us samples of your assemblies containing screws and we will recommend the proper equipment to meet your requirements

The Reynolds Machine Company
Dept. H. H., Massillon, Ohio

No. 1 ALTO Motor Driven, High Speed Tapping Machine

Complete with motor and chuck, ready to attach to light socket.



This efficient high speed tapping machine, with three times faster reverse, is *just what you want*. It is thoroughly well built, but so simple and compact in construction that we can offer it at a *low price*. Capacity, $\frac{3}{16}$ " in brass, $\frac{1}{8}$ " in steel. We also make larger motor driven Tapping Machines.

Write for descriptive Circular and prices

**The Alto Mfg. Co., 1647-51 Wolfram St.
Chicago, Ill.**

POWELL BLOW GUN

Designed to dispense AIR with utmost economy

Used for cleaning machines, machine tools and work benches



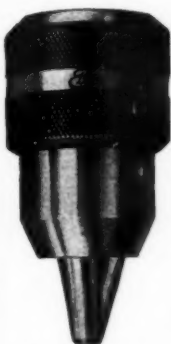
Made with different tips for special requirements.

Circular on request

The Wm. Powell Co.
2525 Spring Grove Ave., Cincinnati, O.

Ettco

New All Hardened Drill Chuck



To keep pace with the demands for Increased Production and Lower Maintenance Costs, Ettco Drill Chucks are now being made with All Hardened Steel Parts. They are stronger and better.

1. *Lighter in Weight.*
2. *All Hardened Parts.*
3. *Keyless.*
4. *Hand Operated.*
5. *Ball Bearing.*
6. *Continuous Grip.*
7. *Simple Construction.*

Seven good reasons for using the new Ettco.

Cash in on your old Drill Chucks. Send them to us and we will allow 15% on the exchange from the following list prices:

No. 1A	Ettco— 0 to $\frac{1}{4}$ in.....	\$ 5.50
No. 2	Ettco— 0 to $\frac{3}{8}$ in.....	6.50
No. 3A	Ettco— 0 to $\frac{1}{2}$ in.....	9.00
No. 3 $\frac{1}{2}$ A	Ettco— $\frac{1}{8}$ to $\frac{5}{8}$ in.....	11.00

Ettco Chucks increase the value of electric drills

Eastern Tube & Tool Company
600 Johnson Ave., Brooklyn, N. Y.



"Titan" Positive Drive Quick Change Drill Chuck

THE "TITAN" has the good features of other drill chucks, plus two special features, which make it the perfect chuck:

(1) *Quick Change*: Simply strike the end of drill, and out it comes. No hammer or special device required. A one-armed man can do it.

(2) *The Broken Tang Collet* is as positive a drive for broken tang drills as though they had never been broken. The saving is obvious.

*The "Titan" saves time and costs
Write for descriptive price list*

Titan Tool Company
Erie, Penna.

Sigourney Sensitive Drills

Plain or Ball Bearing
Belt or Motor Drive

WE MANUFACTURE sensitive drills exclusively. They are built for *service*, and in quality are unsurpassed.

SIGOURNEY DRILLS are made with one to four spindles. The illustration shows our one-spindle ball bearing drill. It has vertical adjusting head, adjustable table, three speeds, runs true and is very sensitive. *All parts are interchangeable.* Shipped belted ready for use.

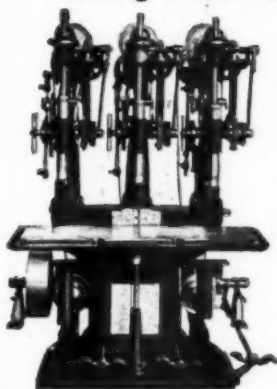
Write for circulars and prices

Sigourney Tool Co.
Hartford, Conn., U. S. A.



Rockford Cuts Drilling Costs

In Big Plants and Small Ones



The Rockford Automatic Gang Drilling Machine

"—superior in convenience, capacity and workmanship, a top-notch"

Are You Responsible for Results? Then you owe it to both yourself and your shop to investigate the merits of the Rockford. Among its many successes are the records established in auto plants and agricultural implement shops—places where economy rules.

Automatic Return—When each spindle has completed its operation it automatically returns to its highest position, where it remains until the starting lever is tripped, when it immediately drops to position above the work.

By Removal of the stop pin in the cam, the spindle will immediately return to lowest position above work, and when tripped by automatic stop, will return to highest position and immediately drop again to work, repeating the movement automatically until the power is shut off. The spindle can be pulled ahead of the feed while in operation, a great advantage in drilling through a cored piece, piping or similar work.

Built with 2, 3, 4 and 6 Spindles—Box Column Type

Write us for Folder. Glad to answer your questions

Rockford Drilling Machine Co.

Rockford, Illinois

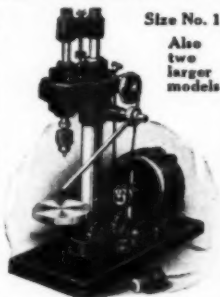
The Muehlmann Quality Sensitive Drill

If you are satisfied with any old kind of a drill because it's cheap, you don't want the "Muehlmann".

The "Muehlmann" is a highly specialized quality tool, combining extreme sensitiveness with minute precision.

On production work the "Muehlmann" usually increases output 25 to 100 per cent, and has the sensitive "feel" necessary for drilling holes down to .010" diameter.

Users like it. Over half of our business is repeat orders. Let us tell you what they say about it and mail you full description.



Size No. 1

Also
two
larger
models

Adolph Muehlmann

434 Elm Street,

Cincinnati, Ohio

Winterhoff Tool and Disc Grinders

No. 2 Combination Grinder and Disc Grinder

DRILLS
GRINDERS
DISC GRINDERS
SAWS
SANDERS
All Motor
Driven



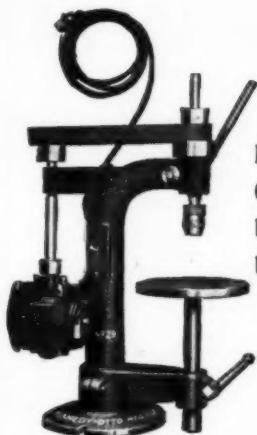
Price
\$45

F. O. B. Elkhart

An ideal tool for the tool room for finishing die blocks or any flat surface discing. Equipped with 6" by 1/2" tool grinding wheel, wheel guard and tool rest, 8" disc wheel, tilting table and protractor guide, 1/4 h. p. motor 1750 r. p. m. Also made in Plain Grinder model at \$35.

Send for circulars describing these machines or see your dealer

Winterhoff Tool & Machine Co., 109 South Elkhart Ave.,
ELKHART, IND., U.S.A.



Drills to the center of a 10" circle.

Capacity, $\frac{3}{8}$ " diameter.

Up and down run of spindle, $2\frac{1}{2}$ ".

Up and down run of table, 7".

Another Original Canedy-Otto Feature

That of first offering an electric bench drill completely equipped and ready for the job, the improved design eliminating the use of all gears and placing the cone pulley in exact alignment, enabling the belt to be run at its maximum speed.

It also eliminates all twists and turns of the belt, meaning both a saving of belts and time, giving a greater speed of spindle, a feature of great advantage when using drill for small diameter.

Regular equipment consists of vertical type ball-bearing motor, toggle type switch, extension cord, socket, belting and chuck.

Canedy-Otto Manufacturing Company

Main Offices and Factory—Chicago Heights, Illinois

New York Branch
407 Broome St.

Complete stock
carried at branches

San Francisco Branch
955 Folsom St.

ORDER ONE ON 30 DAYS' TRIAL.

THE G-S COMBINATION VISE

**A GREAT TIME AND
LABOR SAVER**

For holding work in Drill Press,
Milling Machine, Shaper or Planer.

PATENTED

No. 1	Dimensions	No. 2
3 1/2-in.	Jaws Open	3 1/2-in.
4-in.	Jaws Closed	4-in.
4 1/2-in.	Width of Jaws	5 1/4-in.
5-in.	Width of Base	5 1/2-in.
5 1/2-in.	Jaws Overhang	2-in.
6-in.	Weight	105-lbs.
PRICES		Complete Vise
\$35.00		\$50.00
		F. O. B. Factory

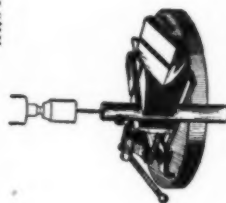


3
Tools for the Cost of
1

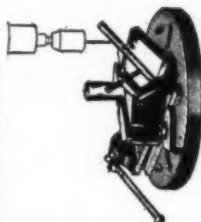
**VISE, V-BLOCKS
AND ANGLE PLATE**

The most practical Vise for
general Machine Shop use

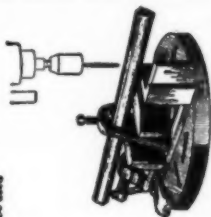
A few of the many ways the G-S COMBINATION VISE can be used



Long shaft can be held in the overhang-
ing jaws. Here the V serves as a jig for
centering shafts, etc.



Shaft held on the angle plate for drilling
holes at any degree. Also short shaft held
in the V in vise. This converts Vise to a
handy jig for duplicate parts.



Work is held in V's with the aid of special
clamps—quick to set up and remove—no
blocks, straps or bolts are necessary.

Germanow-Simon Machine Co.

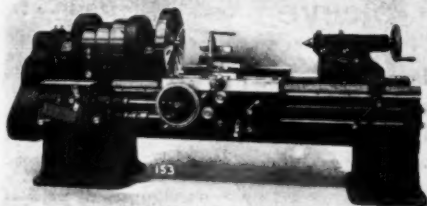
547 West Avenue

Rochester, ❖

❖

New York

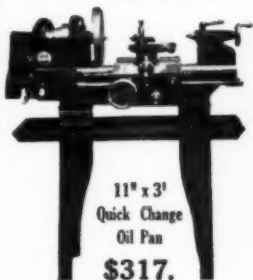
CINCINNATI LATHES



are supplied complete to do your particular jobs most economically with standard or if necessary special tools and fixtures. Our experience of over 20 years' specialization always at your service. Send us blue prints of your work for estimates. If you prefer to avoid repair bills and obtain guaranteed service, our catalog and prices will interest you. Sizes 16" to 30" Cone Type or Geared Head, belt or motor drive.

THE CINCINNATI LATHE & TOOL CO.
3207-3211 North St., Oakley, Cincinnati, O.

Monarch Jr. Lathes



are the smallest members of the Monarch lathe family. Yet they are the "biggest little lathes" built.

The Monarch line of lathes includes all sizes and types from the little 9-inch Junior lathe to the big, massive 30-in. lathe. In this line there is a lathe to fill your requirements at the price you want to pay.

Send for Catalog

The Monarch Machine Tool Co.

206 Oak Street, Sidney, Ohio

The "Utility" Sleeve

A Detachable
Taper Shank
for
Straight
Shank
Tools



Cuts
Small
Tool Costs

Insert a straight shank drill or reamer in this Sleeve, and it works as efficiently as a solid taper shank tool.

Only the straight shank tool of high speed steel is discarded when worn or broken—not the entire taper shank tool. Cuts tool costs, saves time, increases output.

Write for "Utility Tools" Catalog

The J. C. Glenzer Company
6469 Epworth Blvd., DETROIT, MICH.



Multiple Drilling In ANY PATTERN On a Single Spindle

You can do so much more work and cut down your drilling costs with an up-to-date

**U. S. Multiple Spindle
Drill Head**

Made regularly with 2 to 6 adjustable spindles. Special Heads made to your order, with adjustable or fixed spindles.

*Let us help you make
a worth-while saving*

The United States Drill Head Co., 1952 W. Sixth St., CINCINNATI, O.

Michigan Agents—National Sales Engineering Corp., Detroit, Mich.

14" Sensitive Drill

Accurate—Convenient

You will find the U. S. a reliable, rigid tool for the rapid and economical drilling of holes $\frac{1}{2}$ " and smaller.

**Price with motor,
switch and belts - \$115**

**Or with Counter-
shaft for Belt Drive \$70**

Built in a machine tool shop, according to the best engineering practices. Steel spindle, ground to size, with ball thrust bearing; vertical adjustment to head; tables for long and short work; three speeds. Further details upon request.

The U. S. Machine Tool Co.

1952 W. 6th St., Cincinnati, Ohio



Thor

Electric Drills —

**Push the Button
and It's Ready**



MEN who use a THOR Portable Electric Drill, tell us that it is exceptionally easy to operate and control. The easy operating push button switch enables the operator to start or stop at will.

The handle is comfortable and gives positive control over the drill.

THOR Drills are built of easy running, rugged parts that insure durability and economy. Jacobs Chucks, ball and roller bearings, double-silk wound coils, and other high grade parts are standard equipment.

All THOR Electric Drills have a ground wire—an exclusive safety feature. Shocks are impossible!

Independent Pneumatic Tool Co.

600 W. Jackson Blvd.,

Chicago, Ill.



When a Tap Breaks

—that's plenty!

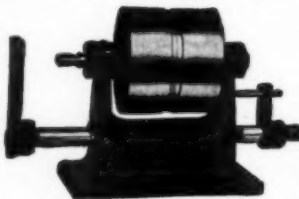
Your Loss Should Stop right there —and it will—if you have a Walton Tap Extractor on hand to extricate the remains.

You simply give it one or two twists, and the piece is out—no loss of time, no damage to the work. Sizes No. 8 to 1 1/4". Shipped on approval.

*Let's have your order Now—
so you can get acquainted*

The Walton Company
Hartford, Conn.

Burke Tapping Machines



are
**Efficient
Inexpensive
Production
Machines**

lower the cost of production, are always buying machinery that will increase production and lower their costs to a minimum. It is the general opinion that automobile manufacturers have the best equipped plants in America.

Several automobile manufacturers are equipped with Burke Tapping Machines and we are continually receiving orders for additional equipment.

The Burke Machine Tool Co.
297 East 16th Street, Conneaut, Ohio

Dependable Service on Hollow Bored Forgings and Steel Shafts



If you make machines on which you use *Lathe Spindles, Piston Rods, Rams, Clutch Shafts*, or similar parts, let us quote on your requirements. Our products are right, our prices are right, and our service is dependable.

Send along your blueprints; we'll both be pleased with a trial order

American Hollow Boring Co.
Erie, Penna.

Adjustable Threading Dies FOR BOLTS AND RODS

Requiring no reversing to remove them.

Also adjustable centering jaws in the new pattern



"DUPLEX" Die Stock Set

Each cutting edge on separate flat piece makes sharpening easy. Wide adjustment.

THE HART MFG. CO., 2319 E. 20th St., CLEVELAND, O.

Faster and Better Riveting

On a NOISELESS Machine



Speed: A rivet a second.

Quality: The heads are perfectly formed and highly polished, without hammer or tool marks. Simple adjustments give whatever degree of tightness or flexibility is desired.

Noiseless: The "GRANT" rolls or swedges the rivet shank. There are no blows. Therefore, it makes no nerve-racking noise.

Write for Catalog and send us some of your most difficult work for riveting

The Grant Mfg. & Machine Co.
C. E. Station, Bridgeport, Conn.

No Smoke

No Fumes



Non-Poisonous

Non-Inflammable

Non-Explosive

KASENIT No. 1
For Fine Work and
Very Rapid
Hardening

Sold in $\frac{1}{2}$ lb., 1 lb.,
3 lb., 5 lb. and
10 lb. tins

KASENIT No. 2
For General
Hardening

Sold in 25 lb. and
50 lb. kegs

Write for Booklet "C" on hardening. Ask your dealer or write—

**KASENIT COMPANY, 2 & 4 Stone Street
NEW YORK, N. Y.**

outstanding reasons

DANLY Die Sets

are standard with 3,000 nationally known concerns.

- 1** *Convenience*—Order by type and number from the 34-page catalogue; eliminates all bother, delay and routine.
- 2** *Saving in first cost*—ranging from 20 to 50% and sometimes more. Costly overhead for castings, patterns and storage space is eliminated.
- 3** *Economies in use*—Shearing of dies is eliminated, "set-up" time is reduced enormously, mounting of dies becomes a simple process, the "pieces per grind" are increased enormously, production is speeded up and stampings are more accurate.

You would not think of making your own monkey wrenches or twist drills. So why continue to make your die sets when you can buy them so much cheaper and more conveniently from Danly?

Write, wire or phone nearest warehouse for 34-page catalogue

Danly Machine Specialties, Inc.

4913 Lincoln Ave., Chicago, Ill.

Detroit, Mich.
1537 Temple Ave.



Long Island City, N. Y.
35 Wilbur Ave.

For Sure Balance--

an absolutely level and solid "Way" is necessary

Bowsher "Balancing Ways"



are brought to an absolute level in ten seconds. No revolving parts.

The edges or "knives" upon which the work is tested are ground true, and are mounted upon the planed "ways" of a heavy bed or frame.

Standards adjustable to suit length of arbor.

Three sizes for floor—one for bench use

Send for Catalog "F"

The N. P. Bowsher Co., South Bend, Ind.

Anderson IMPROVED Ever-Ready Balancing Ways

Balance 'most anything that revolves



Extremely sensitive. Discs accurately balanced. Always ready—need no adjustment—no leveling needed—no centers required. Last indefinitely. The hardened spindles hold their accuracy—don't become indented with ordinary use. Six sizes.

Get the folder and close price.

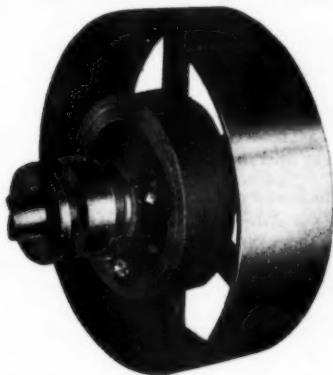
"Swing"	20"	40"	60"	72"	96"	72"
Greatest distance bet. standards	20"	30"	30"	66"	88"	20'
Capacity in lbs.	1000	2000	2000	5000	10000	24000
Approx. shipping weight	45	90	150	350	650	
Code	Ben	Bid	Bis	Bib	Ben	

Any of above can be furnished with longer shafts

Anderson Bros. Mfg. Co.

1915 Kishwaukee St., Rockford, Ill.

Unusual Applications Are Easy for Conway Clutches



*The
CMT
Clutch
Pulley*

**There's
One
for
Every
Need**

ONE of the outstanding features of Conway Clutches is their sterling dependability under the severest strains. They are successful in applications where a clutch of lower quality would soon come to grief.

Conway Clutches are making good today in many machines of giant build, such as trench diggers. It is their duty to respond to every violent impulse of these mechanical brutes—to stop, to start, or to deliver the extra effort of overload, or sudden torque, and they *always* come up to expectations.

The above illustration is an ideal CMT application—the Clutch Pulley. And no matter what machine you are building or for what purpose you need a clutch—use Conways, and your worries on that score are over.

Machine Tool Builders—we have a special message for you—send us your requirements

The Conway Clutch Company

1951 Riverside, Cincinnati, Ohio

Your Cost—As Should Be

Machine Tools are constantly improved with the sole object of reducing the cost of LABOR and OVERHEAD per MACHINE HOUR and to produce a part to a degree of accuracy that will cut the time for subsequent operations and for assembling.

Many new tools now available have increased production per MACHINE HOUR as much as ten times, and saved their cost in a few months. After this they put the saving on the profit side of the ledger.

Check the Machine-hours on the old machine, and

Know your costs—As is.

Then get a time study on a new machine, and

Know your cost—As should be, with

**MODERN MACHINE TOOLS—
The Master Tools of Industry**

KNOW YOUR COSTS

**NATIONAL
MACHINE TOOL BUILDERS'
ASSOCIATION**



Threading at 3000 R. P. M.

These rods are being threaded with a No. 8-32 thread 5-16" long, at an average production of 1400 pieces per hour on our Standard High Speed Tapping Machine.

How about your threaded work?

Leland-Gifford Co.
Worcester, Mass., U. S. A.

BRANCH OFFICES:

Boston
Cleveland

Chicago
Detroit

New York
Rochester





"Gusher" Motor Driven Machine Tool Lubricant Pumps

"GUSHER" PUMPS are simple, efficient, require the least power, and stand up to the severest wear and tear. They are "Pumps of Quality."

NO gears—NO foot or relief valves—
NO packing nuts—NO priming—NO
injury from grit or small chips!

Capacities, 3 to 30 gallons per minute.
Made also to set outside reservoir and
connect by piping where that is desirable.

Catalog and prices gladly sent on request

The Ruthman Mchy. Co.
528-534 E. Front St.
CINCINNATI, OHIO

USE the CHICAGO No. 2 POWER PIPE THREADING MACHINE



For
**Production
and Precision
Threading**

PORTABLE

Capacity:
 $\frac{1}{4}$ " to 2" Pipe
 $\frac{1}{2}$ " to 1 $\frac{1}{2}$ " Bolt

Featuring:

1. Quick Die Change
2. Automatic Die Head
3. Three Speeds
4. Perfected Oil Control

Send for Catalog

**Chicago Pipethread
Machine Co.**

Office and Factory: 1623 Racine St., Racine, Wis.



When Westinghouse Buys Thirty-Four "Rarefieds"—

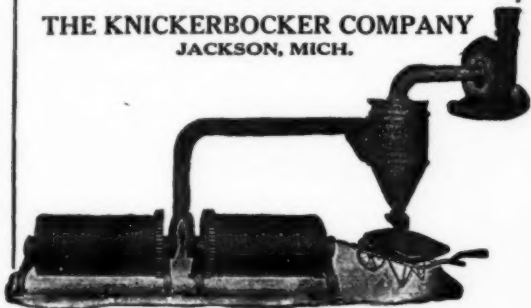
Doesn't it strike you as though the Dust Collector so recommended is decidedly well worth looking into? And Westinghouse is only one of our many satisfied big customers—we can also refer you to Buick Motor, Western Electric, Solvay Process, Willis-Overland, General Electric—and hundreds of others, both large and small.

The "Rarefied" Dust Collector

is operated on the "rarefied" or partial vacuum principle, the air being drawn thru the collector, and the dust is removed before the air reaches the fan. It is thoroly efficient, uses less power and repair costs are kept down close to zero.

Let us mail you our interesting Booklet

THE KNICKERBOCKER COMPANY
JACKSON, MICH.



Jacobs
Chucks



No. 1
Hercules
Air Drill
(Patented)

*Regularly
equipped
with
JACOBS
CHUCKS*

Hercules Drill

The HERCULES
has a capacity
Two smaller
respectively, w
Chucks are fu

HERCULES
without piston
rods, giving h
and a minimu

*Write us
HERCULES*

THE BUCKEYE PORTABLE TOOL CO.,

*This advertisement is
in the interests of good Drilling
by the makers of the Jacobs*

Modern business



HERCULES Portable Air Tools

Drills—Grinders—Buffers

HERCULES No. 1 Drill, shown in the illustration, has a capacity up to $\frac{5}{8}$ " and weighs only 13½ lbs. Smaller types have capacities up to $\frac{1}{4}$ " and $\frac{3}{8}$ " respectively, with weights of only 7 and 8 lbs. Jacobs tools are furnished as regular equipment

HERCULES Portable Air Tools are simple in design, without pistons, toggles, crankshafts or connecting rods, giving high power with low air consumption and a minimum of vibration.

Write us for complete information concerning HERCULES Air Tools and for our liberal trial plan.

JACOBS TOOL & DIE CO., 135 Wayne Ave., DAYTON, OHIO

*Advertisement is published in the
Drilling Equipment
by the Jacobs Chuck*

Business requires modern tools



Lourie's Quick Acting Arbor Presses

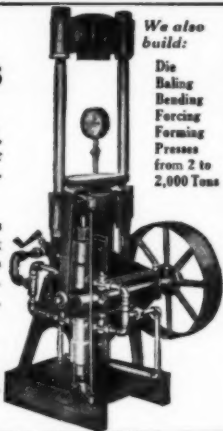
Many Styles and Sizes

The picture shows a small, compact power press for broaching, forming, punching, forcing, etc., etc.

We can produce the press which will do your work well, and at bottom cost, no matter what your requirements may be in this line.

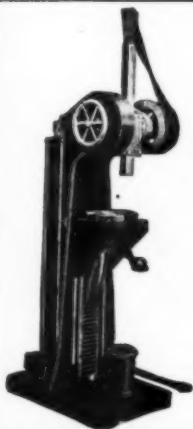
*Put it up to us today—
Glad to make an estimate*

LOURIE HYDRAULIC CO.
Springfield, Ill.



*We also
build:*

Die
Baling
Bending
Forcing
Forming
Presses
from 2 to
2,000 Tons



Atlas Arbor Presses

For All Forcing Operations

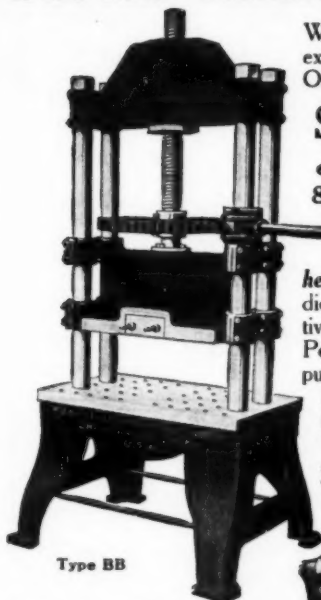
Illustration shows our No. 55 Power Drive Press, which is adaptable for fast production work and capable of supplying ten tons pressure.

*Write for our Bulletin—
showing 30 different sizes*

Atlas Press Co.

Department B,
Kalamazoo, Michigan

One Man Handles All Dies



Type BB

With this up-to-date and exceptionally convenient One-Man — Four-Post

Screw Press

easily delivering
80-Tons Pressure

Your tool maker requires *no help* in handling any dies. Machine is sensitive, rigid, powerful. Perfect alignment of punch and die is assured.

Abundant room between bed and ram. We also make three smaller sizes. Table of Type BB is 20"x36".

A Surface Grinder

that's a revelation in quiet efficiency. Its rigidity insures accuracy. Has non-vibrating wheel. Both feeds have graduated dial.

Let us send folders and prices

JARECKI MACHINE AND TOOL CO.

Successor to Manhattan Machine & Tool Works
Dept. A. GRAND RAPIDS, MICH.



Patented
Jan. 30, 1917



Type 6

Shops and Service Stations.

**Now equipped with Belden Rubber Cord
Approved by the Underwriters**

Write for descriptive circular

The Cincinnati Specialty Mfg. Co., Inc.

1903 Powers St.,

Cincinnati, Ohio

Use the Blue Book to Reach The Big Manufacturers

in all lines of business, in every state in the Union, who use machine tools in their plants.

It goes to more of them than any other publication on earth, because we mail it to them.

Our method is simple, as most good things are, and as effective as it is simple.

Write for rates and full particulars

Hitchcock Publishing Co.

508 S. Dearborn St.,

Chicago, Ill.



The Old Way

Results in damaged shafts, bushings, pins and other parts, as well as accidents to the workmen.

With Nicholson Arbor Presses

all of these losses and accidents are eliminated, and considerable money is saved. Made in five sizes that take work up to 20" in diameter and 31" high and exerting pressures up to 9,000 lbs. Can make immediate delivery on all sizes and will be glad to send any size on trial.

Nicholson Expanding Mandrels

Save Space—A set of nine does the work of several hundred solid mandrels.

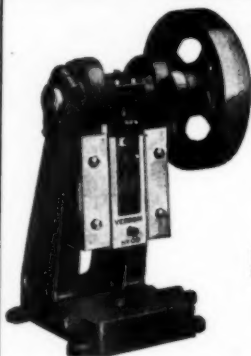
Save Time—Instantly fit any hole, round or square, from $\frac{1}{2}$ " to 7".

Save Labor—No need to caliper a dozen or so solid mandrels, or turn one down to fit a certain j.b.

Write for literature and 30-day trial plan

W. H. Nicholson & Co.
117 Oregon St., Wilkes-Barre, Pa.





Trade **Verson** Mark

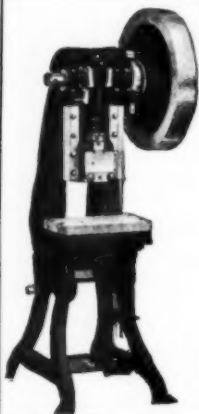
Is a symbol of
QUALITY
found only on Verson
Power Presses
Arbor Presses
and
Angle Shears

For the prevention of accidents
insist on Verson presses.

They are equipped with an
Automatic Safety Clutch

Write for Circular

La Salle Machine Works, 3013 S. La Salle St., CHICAGO, ILL.



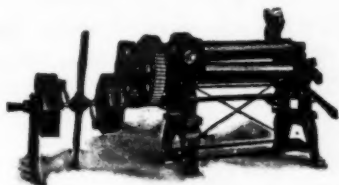
Husky, Powerful

speedy Punch Presses
deliberately designed
for High Production
work.

All Types and Sizes

Write for Catalog

Rockford Iron Works
Rockford, Ill.



BELOIT

INITIAL TYPE

Sheet & Plate Bending Rolls

The Beloit Initial Type Rolls are built in a large number of sizes and capacities, and for a great variety of work.

The modern design of the Beloit Rolls of this type makes it possible for the operator to curve plates completely to the edge, thus getting away from the undesirable flat near the edge of the sheet.

The quick-acting cam lever device raises the top roll for the removal of completed cylinders.

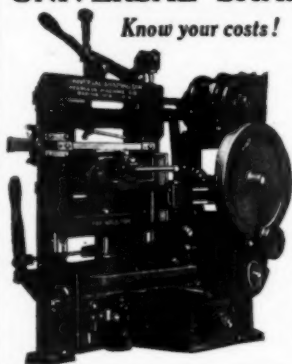
Individual and simultaneous adjustment of both ends of the forming roll can be furnished, and the machine can be arranged for third roll drive, when necessary.

Those in the market for Bending Rolls cannot afford to fail to give us their specifications, and to get our quotations.

We solicit your inquiries for Bending Rolls, either Initial Type as shown above, or the Pyramid Type machine, as well as for Punching and Shearing Machinery, both hand and power.

Hendley & Whittemore Co.
100 S. State St., **BELOIT, WIS.**

— PEERLESS — UNIVERSAL SHAPING SAW



**Know your costs! Different Principles
Greater Efficiency**

**Give The Most Of—
Speed
Accuracy
Blade Economy**

SIZES:

6"x6" -- 9"x9" -- 13"x13"

**PEERLESS
HIGH SPEED HACK-SAWS
6"x6" 9"x9" 13"x16"
Sturdy--Efficient--Reliable**

Peerless Machine Co.

1409 Racine St.
Racine, Wisconsin

Write for Details

The Springfield Straightening Press

**"The Acme
of
Convenience"**



**Made in
3 sizes**

**Invaluable
in the
tool room,
also for
straightening
crank and
cam shafts
and other
automobile
parts.**

The arrangement of this press is the *acme of convenience*, as any work within the range of centers may be tested and straightened without unnecessary walking from press to lathe each time in straightening rough or finished work. Any length, however, may be operated upon. Of "*Springfield quality*."

Write for folder illustrating many of its uses

The Springfield Machine Tool Co., Springfield OHIO

We also manufacture Engine Lathes and Shapers

Spring Press

(UNIFORM BLOW)

Foot or Power
Single and Double Action

These new dependable Presses
are used in large numbers by
manufacturers of—

Electric Devices, Toys,
Jewelry, Clocks, Cutlery,
Hardware, Radio Sets,
Instruments, Etc.

The Uniform Blow is a very
special feature—it increases pro-
duction and eliminates costly in-
spection. Investigate.

The Taylor & Fenn Co.
Hartford, Connecticut, U. S. A.



Be sure the letter

is on all your punches

and dies. They are made in our own factory and are genuine.



Write for Prices

**WHITNEY
METAL TOOL CO.**

**95 Forbes St.
ROCKFORD, ILL.**

T.H.L. Front Lever Bench Punch

Malleable iron body; working parts hardened. Steel shaft and plunger. Die cannot lose alignment with punch. All parts interchangeable. Built for hardest, toughest work.

PRICE \$45

Extra Punches, 20 cents each; extra dies, 30 cents.

Capacity 13/32" thru 1/4" steel, 11/32" thru 5/16". Punches up to 1/2". Weight, 70 lbs.

A good buy; can ship promptly

**T. H. LEWTHWAITE
MACHINE CO.**

(Est. 1890)

417 E. 31st St., NEW YORK





Style "WC"



Style "O"



The Hinge



Style "G"



Style "A"

Gits Gravity and Wire Wick Feed Oilers

Gravity Feed—flushes the bearing.

Wire Wick Feed—gives desired prolonged feed.

Wire Wick—replaces waste or felt.

Made in Standard sizes.



Style "L"

Write for Catalog No. 20

Showing 255 full size illustrations with detail dimensions.



Style "U"

GITS OIL CUPS

Oil cups for every lubricating need. State style and size in which you are interested, and we will send free samples and catalog.



Style "T"

GITS BROS. MFG. CO
1940 SO. KILBOURN AVE., CHICAGO

Send for this
FREE
CHART



New Improved "RACINE" JUNIOR

WORM GEAR DRIVE direct from motor is now used. All gears enclosed and running in oil. New Improvements in combination with old superiorities make Racine Junior absolutely free from vibration. The quietest, smoothest running as well as the fastest and most accurate metal cutting machine of its capacity.

Rear view showing motor mounting

Capacity 4 in. Can be used as a portable. Not necessary to bolt to floor. Runs from electric light or power circuit. Ask for bulletins on Racine High Speed Metal Cutting Machines of every Capacity to 16 in.

Use "Racine" H. S. Wood and Metal Band Saw Blades & "Racine" H. S. Tungsten Power and Hand Hack Saw Blades. **Catalog H.**

Racine Tool & Machine Co.
1429 Junction Av., Racine, Wis.
"STANDARD THE WORLD OVER"

For Sawing Solid Bars, Beams, Channels, Angles, Tees, Etc. For Accurate Die Work, Tool Room Work and All Kinds of Shop Sawing, Use the MARVEL METAL BAND SAW No. 8

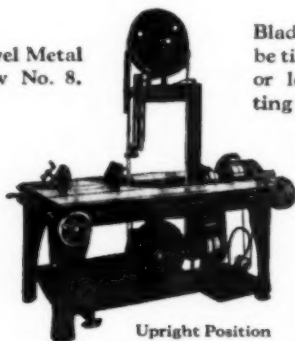
It cuts off square and true, and will also cut on an angle right or left without swinging the bar around the shop.

CAPACITY up to and including 18 INCHES

Write us today. Put one of these machines to work in your shop.

The Marvel Metal
Band Saw No. 8.

Blade frame can
be tilted to right
or left for cut-
ting on an angle.



Upright Position

Write today for special circular

ARMSTRONG-BLUM MFG. CO.
341 N. Francisco Ave., CHICAGO, ILL.

Second-Hand Machinery

Lists of Second-Hand Machinery, either For Sale, Wanted or For Exchange, set in uniform style, will be published under this heading at the rate of **50 cents a line**, across the page, each issue, plus **\$2.80** for name and address. Minimum charge, **\$5.00**. No display permitted in this department.

Write directly to those offering the machines for sale for prices and full descriptions. If what you seek is not listed, use the blank enclosed to make known your wants to the publisher, who will pass them along to all Machine Tool Blue Book advertisers.

Circulation of Machine Tool Blue Book, 25,000.

FOR SALE BY

M. A. Wertman,	505 Superior Bldg., Cleveland, Ohio
Bench centers, B. & S., 95%.	Motor, 30 h.p. Lincoln, 220-3-60, 90%.
Blue print machine, 42" Pease, 95%.	Press, No. 4 Bliss Styles, 90%.
Drill, No. 315 Baker, 90%.	Planer, 24"x6" Gray, 50%.
Drill, 6-spindle Nat'l-Acme 95%.	Screw machine, No. 2 Milholland,
Grinder, 24" Ingersoll, cutter, 90%.	g. f. h.
Lathe, 16"x8" Lodge & S., g. h., 50%.	Shaper, 24" G. & E., s. p. d., 90%.
Miller, No. 3 Kempsmith univ., 90%.	Shaper, 28" Ohio heavy duty, 85%.

FOR SALE BY

The Reeve-Fritts Co.,	558-560 W. Washington Blvd., Chicago, Ill.
Die filer, No. 3 Barry, floor type.	Lathe, 26"x12" Blaisdell, \$300.
Drill, 16" Leland-Gifford, rd. col.	Lathe, 16" Dreses universal Fox.
Drill, 24" Milwaukee, b. g., p. f.	Miller, No. 0 LeBlond, plain.
Grinder, 5"x10" Greenfield plain.	Miller, No. 2-B heavy B. & S. plain.
Grinder, No. 2 Bath universal.	Pipe machine, 6" Merrill.
Grinder, 12" Besly, disc, complete.	Pipe machine, 12" Curtis & Curtis.
Lathe, 14"x8" Hendey, q. c. g., taper.	Planer, 22"x22"x5" Powell.
Lathe, 16"x8" Rahn-Larmon, q. c.	Planer, 32"x24"x6" Rockford.

FOR SALE BY

Foster Machinery Company,	10203 Quincy Ave., Cleveland, O.
Angle shear, No. 2 Cleveland, 4x4x1/2" angle.	Miller, No. 00 Brown & S., hand.
Bolt cutter, 1 1/2" Acme.	Miller, No. 00 Owen, Fox type.
Grinder, Greenard, tool & cutter.	Press, No. 1 Consolidated.
Grinder stand, Western No. 4, two 14" wheels.	Riveter, Hanna, 24" throat, 15" gap, 1/2" rivet.
Lathe, 18"x8" Lodge & Shipley.	Rivet hammers, No. 2-A, No. 4-A.
	Shaper, 16" Garvin.
	SQUARING SHEARS.
Bertsch 10"x14 ga., power.	No. 210-A Pexto, power.

FOR SALE BY

J. L. Lucas & Son, Inc.,	3 Fox St., Bridgeport, Conn.
NEW BRITAIN AUTOMATICS.	
2-New 1-9/16, 6-spindle, latest type, cost each \$4800	\$3600.
3-1 1/2"x7, arranged for chucking, can be changed easily, serials 9000, ea.	2500.
4-1x5, 6-spindle, motor drive, now under belt, serials 6580 and up, each	1250.
4-Nearly new, 5-spindle, fine condition, extra parts, collets, serial	
5061-88-89-90, each	750.
3-No. 3, 6-spindle chucking machines, still set up, serials 9000, each	1500.
1-No. 24 chucking machine, rebuilt, with six 2-jaw chucks, ser. 6509	1750.
1-No. 24 chucking machine, no chucks, will be rebuilt, serial 5772	1600.
2-No. 33 chucking machines, very fine condition, serials 6188-8109, each	1750.

SECOND-HAND MACHINERY

FOR SALE BY

Cyril J. Bath & Co., E. 70th & Mch. Ave., N. E., Cleveland, O.

BORING MILLS—VERTICAL.

- | | |
|---|--|
| 42" Baush, 2 swivel heads, 75%. | 100" Niles, 2 heads. |
| 48" Colburn, 2 swivel heads. | 10'-16" Betts, 2 swivel & 1 center hd. |
| 42" Bullard rapid production, with
one swivel and one turret hd., 80%. | 60" Niles, 2 swivel heads and one
internal boring head. |
| 7' Betts, double head, 85%. | |

BORING MILLS—HORIZONTAL.

- | | |
|--|--|
| No. 35-A Landis, floor type, hori-
zontal, 90%. | No. 36 Landis, floor type, 3½" bar, 80%. |
|--|--|

DRAW BENCHES.

- 15,000 lbs. to 25,000 lbs. Waterbury-Farrel, United Engineering and Stand-
ard; 20" draw, with 18" extensions for mandrels, heavy cast iron; 85%.

DRILLS—MULTI-SPINDLE.

- | | |
|----------------------------|--------------------------------|
| 4-spindle 20" Barnes, 85%. | 4-spindle Barr sensitive, 85%. |
|----------------------------|--------------------------------|

DRILLS—RADIAL.

- | | |
|-------------------|------------------------|
| 4' & 5' Bickford. | No. 1, 8" wall radial. |
|-------------------|------------------------|

DRILLS—UPRIGHT.

- | | |
|---|--------------------------------------|
| 24" Cincinnati, slid. hd., fric. bk. grs. | 32" Cincinnati, with tap. att., 75%. |
| 28" Cincinnati, sliding head, 80%. | 24" No. 25 Foote-Burt, 90%. |

FORGING MACHINES AND BULLDOZERS.

- | | |
|------------------------------------|-------------------------------------|
| 1, 2, 3, 4 & 5 Bulldozers. | 250-ton Mesta steam hydraulic, 85%. |
| 1', 1½', 2' & 4" Forging machines. | |

GRINDERS.

- | | |
|--------------------------------------|---|
| No. 3 Brown & Sharpe univ., 70%. | 18x96" Norton plain, 75%. |
| 18x36" Modern univ., and parts, 70%. | Mammoth shear blade grinder, capa-
city 100" long. |
| 84" Diamond surface, 85%. | |

HAMMERS

- | | |
|---|---|
| No. 2 Nazel, air, arranged motor dr. | 1500-lb. Waterbury-Farrell, board
drop, 80%, (2). |
| 100-lb. Bradley, helve, 75%—90% (3). | 2000-lb. Waterbury-Farrell, board
drop, 80%, (2). |
| 350 lb. Bement Miles, steam forging. | 2500 lb. Bement-Miles, stm. forging. |
| 800 lb. Bement-Miles, steam forging. | 8000 lb. Chambersburg, stm. forging. |
| 800-lb. Billings & S., board drop, 75%. | 800-lb. to 4000 lb. Chambersburg and
Massillon steam drop hammers. |
| 800-lb. Waterbury-F., board dr., 75%. | |
| 800 lb. Lane, steam forging. | |
| 1500 lb. Lane steam forging. | |

LATHES.

- | | |
|--|--|
| 16" to 20" tool room, various lengths. | 32"x32" Bridgeford, comp. rest, m. d. |
| 20"x10" Prentice, geared head, 85%. | 36"x44" Bridgeford, c. r., m. d. |
| 25"x12" LeBlond heavy duty. | 48"x26" Bridgeford, grd. hd., t. a., 85%. |
| 27"x22" Bridgeford, pl. turning, m. d. | 54"x34" Houston, Stanwood & Gam-
ble, geared head, motor drive. |
| 30"x22" Bridgeford, pl. turning, m. d. | 60x36 Houston Stanwood Gamble. |
| 32"x18" Schumacher, cone head, 60%. | |

MILLING MACHINES.

- | | |
|--------------------------------------|-------------------------------------|
| Style "B" Gooley & Edlund, 80%, (2). | No. 3B Brown & S., pl., heavy, 60%. |
| No. 2 Cincinnati plain, 80%. | Becker miller, model "C," table |
| No. 3 Brown & Sharpe, plain, 65%. | 14"x54", motor drive, 85%. |

PLANERS.

- | | |
|--|---|
| 30"x30"x8' Gray, single head, 80%. | 72"x72"x16" Betts, four heads, 90%. |
| 48"x48x18' Pond, 4 heads, heavy
duty. | 60"x48"x16" Pond, 2 hds., old style,
light pattern, 50%. |

PIPE MACHINES.

- No. 9½ Merrill, capacity 2½" to 8".
2", 4" & 8" Jarecki, with dies and countershaft, late models, 85%.

PRESSES.

- No. 57 Toledo trimmer, with side shear, 80%.
Waterbury-Farrel trimmers. 60" flywheel, 80%, (2).
No. 56 Consolidated, 4" stroke, 60%.

BENDING ROLLS.

- 7'-11" capacity Hendley & Whittemore.
10'-11" capacity Niles-Bement-Pond.
14'-14" capacity Southwark.

SECOND-HAND MACHINERY

Cyril J. Bath & Co.—Continued

PUNCHES AND SHEARS.

6x6 Hillis & Jones angle shear.
No. 26 Whitmore slitting shear.
No. 2 Hillis & Jones horizontal punch, 70%.
54" gap American ship punch, capacity 1" thru 1", 70%.
84" throat, Long & Allstatter capacity about 1" thru 1",
Kling Bros. horn press, 60" horn, flywheel 50" dia., 64" face.
48" throat No. 4 Southwark, capacity 2"x1 1/2".
60" throat No. 3 Southwark, capacity 1 1/2"x1 1/2".
36" throat style G, Cleveland, capacity 1 1/2"x9" flat or 2 1/2" round bars.
No. 6 Quickwork rotary shear, capacity up to 1 1/2" plate.
36" throat Lennox rotary shear, capacity about 1" plate.
No. 2 Garrison alligator shear.

SAWS.

48" Newton cold saw, motor drive. Power hack saws, 6" to 9".

SHAPERS.

20" American, crank, belt, 80%. 24" Walcott, crank, back geared, 90%.

SLOTTERS.

48" Niles-Bement-Pond, motor dr. 12" Sellers, 75%.

TUMBLING BARRELS.

Several sets 18"x48" chill lined square, with roller bearings and exhaust.

TURRET LATHES AND SCREW MACHINES.

21" Gisholt, standard model, 70%. No. 3A Warner & Swasey.
3"x36" Jones & Lamson.

MISCELLANEOUS.

Acetylene generator, Davis.
Blower, No. 4 Root, motor drive.
Blower, American, 9' fan, motor driven, 85%.
Blowers, Sturtevant, motor driven, 85%, (2).
Boring machine, for cylinders, portable, 4" bar, 7" feed, arranged for motor or engine drive, 75%.
Gear cutter, 36" Gould & Eberhardt, 60%.
Keaseater, No. 4 Mitts & Merrill.
Pyrometer, Brown.

FOR SALE BY

Clinton Machinery Co.,

128 S. Clinton Street, Chicago, Ill.

MILLING MACHINES.

No. 3H LeBlond h. d. universal, fully equipped, each \$1750.
No. 2 Cincinnati universal 500.
No. 21 Garvin, geared \$175.
Pratt & Whitney and Hardinge, bench type 125.

LATHES.

19"x8' Springf'd, s. q. c., d. b. g. \$350.
18"x8' Boye & Emmes, q. c. g., taper attachment 600.
16"x8' Prentice, q. c. g. 400.
18"x8' Carroll & J., s. q. c. \$225.
14"x6' Rockford, s. q. c., like new 325.
14"x6' Reed, with taper att. 175.

DRILL AND PUNCH PRESSES.

10" New Champions bench type, (15), each \$30.
14" New Champions, (5), each 85.
20" Superior, lever & hand fd. 50.
21" Weigel, b. g., s. h., with tapping attachment 250.
24" Superior, b. g., s. h., with tapping attachment 200.
24" Superior, b. g., slid. hd. \$175.
No. 1 Consolidated, open back inclinable 3" stroke 125.
No. 1 Rockford, o. b. i. 140.
No. 2 Kohler, o. b. i. 225.
No. 3 Ferracute 150.
No. 4 Consolidated, o. b. i. 425.
No. 36 Niagara, b. g., like new 450.

SHAPERS.

14" Smith & M. crank, (2), ea. \$235.
17" Smith & Mills b. g. crank 375.
20" American, b. g., with universal table \$650.

MISCELLANEOUS.

Grinder, 8" Heald ring & surf. \$75.
Hammer, 2A HD High Speed. 150.
Oil separator, No. 2 American 2540 cu. in. cap. 150.
Shear, 30", power sq., 14 ga. \$150.
Screw machine, No. 4 W. & S., wire feed 300.
Screw mch., No. 1 W. & S., w. f. 125.

SECOND-HAND MACHINERY

FOR SALE BY

McDonald Machinery Co., 1531-33 N. Broadway, St. Louis, Mo.

Bolt threader, No. 734 Little Giant.
Clock, electric time system.
Demagnetizer, Walker.
Drills, Leland-Giff'd 2-3 sp., h.s., b.b.
Drills, 20", 24", 34" b.g., & tapping.
Drill, Fox 5-spindle adjustable.
Furnace, Hoicraft 92 k.w. annealing.
Hack saw, 4x4, 6x6 & 8x8 h. s.
Lathes, Davis 22"x10", Bridgeford
27x9, Walcott 18x8, q. c.
Milling machines, Kempsmith No. 2;
LeBlond No. 4 heavy plain; Ohio
No. 20 plain; 1-Knight vertical mill
& drill; Becker "SD" vert., rotary
table, 17200 lbs.; Cin'ti No. 3 plain.

Planers, Sellers 36"x36"x23", 2 heads;
Pond 42"x42"x16", 2 heads.
Punch presses, Swaine No. 40 arch;
Bliss No. 24, double crank.
Punches, Felber 1" in 1", and slitt.
shear; Scully, 20" throat, 1" in 1".
Saw, Nutter Barnes 6" cold.
Shapers, 26" open side planing; 15"
Smith & Mills; 15" Kelly; 16"
Cincinnati; 16" Milwaukee; 7"
Rhodes; 24" Walcott; 20" Ohio.
Shears, 60" thrt. rotary slitting. (2).
Welders, 20 k. w. spot, Toledo. (2).
Welders, butt, Federal, 1/2" rds.

FOR SALE BY

Brownell Machinery Co., 150 Pine St., Providence, R. I.

BORING MILLS.

No. 14 Beaman & Smith horizontal
drilling, tapping, boring and mil-
ling machine, 3 1/2" spindle. 24" Bullard rapid production.
30" Haush vertical.

GRINDERS.

No. 1 B. & S. small auto. surface.
No. 2 Brown & S. cutter & reamer.
No. 1 Norton univ. tool & cutter.
No. 2 Norton univ. tool & cutter.
No. 12 B. & S. plain cylindrical
Taylor & Fenn water tool.

METAL CUTTING MACHINES.

No. 7-K Atkins Kwik-Kut hack saw
8x8. No. 2 Marvel hack saw.
13"x18" Peerless h. s. hack saw. No. 1 Burr cold saw.
No. 2 Burr cold saw.

MILLING MACHINES.

No. 3 Brown & Sharpe universal.
No. 14 Brown & Sharpe universal.
No. 3 Brown & Sharpe plain.
No. 13 Garvin plain. No. 2 Brown & Sharpe vertical.
Type "A" Briggs manufacturing.
No. 4 Van Norman duplex.
Whitney hand miller.

PLANERS AND SHAPERS

48"x72"x20" Gray, 4 heads. 17"x20"x 4' Whitcomb-B., one hd.
38"x38"x14' Gray, 4 heads. 17"x17"x 4' Whitcomb, one head.
30"x30"x 8" Bement-Miles, 2 heads. 15" Hendey friction shaper.
26"x30"x14' Whitcomb-B., 2 heads. 16" Ohio plain shaper.
24"x24"x 6" Powell, one head. 24" Gould & Eberhardt b. g. shaper.

PRESSES.

Nos. 3 & 3 1/2 Greenerd arbor presses. No. 18 Bliss s. a. inclinable.
No. 24 Atlas arbor press. No. 2 Stiles s. a., 1".
No. 1 Standard broaching & drawing. Torrington, d. a.
No. 7 Zeh & Hahnemann percussion. 100 lbs. Standard plain drop.
No. 71 Bliss s. a. 1 1/2" stroke. 200 lbs. Standard automatic drop.

SCREW MACHINES AND TURRET LATHES.

No. 00 Brown & Sharpe automatics, No. 6 B. & S. w. f. hand screw mch.
with slotting attachment. No. 24 Garvin geared friction head.
3" Gridley 4-spindle automatics. 3"x36" Jones & Lamson flat turret.
4" Gridley 4-spindle automatics. No. 2-F P. & J. piston & piston ring.
No. 6-A Potter & Johnston auto. 14x18 Pratt & W., b. g., hand screw.

MISCELLANEOUS.

Broaching machine, No. 2 Lapointe. Marking mche. No. 6 Martin, hand.
Die filing machine, Thurston. Radial, 5' Reed-Prentice plain.
Drill, 25" Weigel, sliding head. Radial, 6' Prentice Bros., cone dr.
Drill, 3-spindle Cincinnati. Slotter, 12" Bement-Miles.
Gear cutter, 26" B. & S. No. 3 auto. Swaging machine, No. 2 Standard.
Gear cutter, 18" B. & S. No. 13 auto. Tapping mche., No. 2 Garvin vert.

SECOND-HAND MACHINERY

FOR SALE BY

Chas. Molitor Machinery Co., 118-124 S. Clinton St., Chicago, Ill.

LATHES.

- | | |
|---|--|
| 32"x19' New Haven, taper, older style. | 16"x10' & 16"x6' Pratt & Whitney, taper, draw, collets, relieving att. |
| 24"x40"x12' Greaves-Klusman, cap. | 16"x8' Pratt & Whitney, q. c. g., taper, relieving attachment. |
| 24"x10' Lodge & Stiple, grd. hd. | 16"x6' Walcott, q. c. g. |
| 20"x10' LeBlond heavy duty, q. c. g., taper attachment. | 16"x6' Pratt & W., q. c. g., taper. |
| 20"x8' Monarch, q. c. g., dbl. g. | 15"x6' Rockford, qk. ch. grd., taper, draw collet attachment. |
| 18"x8' Morris, q. c. g., dbl. g., (2). | 15"x5' South Bend. |
| 18"x8' Walcott, q. c. g., d. b. g. | 13" Champion engine lathe. |
| 18"x8' Sidney, q. c. g., d. b. g., (2). | 12"x8' Pratt-W., taper, draw collets. |
| 18"x8' Hamilton, q. c. g., d. b. g. | 12" Lancaster engine lathe. |
| 18"x8' Bradford, q. c. g., d. b. g. | Porter-Cable, (2). |
| 16"x8' Monarch, q. c. g., sgl. pul. dr. | |

MILLERS.

- | | |
|-------------------------------------|--------------------------------------|
| 24" Bullard vert. rapid production. | No. 3 Kempsmith, gr. box fd., plain. |
| No. 2 Kempsmith universal. | Cincinnati Lincoln type. |
| No. 1 Kempsmith plain. | No. 2 Hendey, gear box feed, plain. |
| No. 4 Cincinnati, single pulley. | Nos. 3, 5, 5A & 5C Becker, vert. |
| No. 5 Defiance horizontal. | Gooley & Edlund, production. |
| 24" Bullard vertical turret. | 24" Twin spline miller, P. & W. |
| 24" Colburn vertical. | |

PLANERS AND SHAPERS.

- | | |
|----------------------------------|--------------------------------|
| 32"x12' New Haven planer. | 20" Smith & Mills b. g. crank. |
| 22"x5' Gray planer. | 16" Columbia b. g. crank. |
| 16"x3' New Haven planer. | 16" Steptoe crank shaper. |
| 24" Rockford b. g. crank shaper. | |

DRILL PRESSES.

- | | |
|-------------------------------------|--|
| 24" Baker Bros. heavy duty, (3). | 4-spindle Allen, 4". |
| 24", 26" Aurora, Cincinnati, etc. | Sipp's, with comp. tilting table, (2). |
| No. 3 Fox multiple, 16-spindle, 4". | 1, 2, 3, 6 sp. Leland-Gifford, 4" cap. |
| 2, 3 spdl. 24" Aveys, 1" cap. (3). | Large variety 14", 16", 20" & 24". |

GRINDERS.

- | | |
|-------------------------------------|-----------------------------|
| Bryant internal and chucking, (6). | 10"x36" Norton cylindrical. |
| No. 13 Brown & Sharpe universal. | 4"x20" Norton cylindrical. |
| Nos. 1 and 2 Cincinnati universal. | No. 11 Brown & Sharpe. |
| Cincinnati universal, 4"x57" table. | 40" disc, Gardner, Besly. |
| No. 1 & No. 2 Norton universal. | No. 65 Heald cylinder. |

SCREW MACHINES AND TURRET LATHES.

- | | |
|---|--|
| Jones & Lamson, single spindle. | 14" Gisholt, motor drive. |
| No. 3 Warner & Swasey pl. hand. | Nos. 0, 1, 2, 3 Foster and Bardons & Oliver. |
| No. 2 Brown & Sharpe semi-auto. (2). | 4", 4", 1 1/2", 2" Cleveland auto. |
| No. 6 Foster, power long. & cross. | 3 1/2" capacity Acme universal. |
| No. 4 Warner & Swasey universal. | 16"-18" Fox turret lathes, fric. hd. |
| No. 4 Warner & Swasey, screw mch. | New Britain auto. chucking mch. |
| 1" & 1 1/2" cap. Acme, b. g., frict. h. | |

PUNCH PRESSES AND SHEARS.

- | | |
|----------------------------------|-----------------------------------|
| 100-ton Lourie hydraulic. | 10' Niagara square shears, 20 ga. |
| No. 4 Zeh & Hahneman arch press. | 4" capacity slitting shear. |
| No. 3 Black & Johnson (3). | No. 3 Overmeyer sprue cutter. |

GEAR CUTTERS.

- | | |
|-------------------------------------|--------------------------|
| No. 12 Barber-Colman. | Waltham automatic, (4). |
| No. 13 Brown & S., bevel & spur. | 48" Brown & Sharpe spur. |
| Nos. 1 & 1 1/2 Standard auto., (8). | |

MISCELLANEOUS.

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|--|--------------------------------------|
| Bolt cutter, 1" Landis. | Broaching machines, Nos. 1 & 3B |
| Bolt cutter, 1 1/2" Geometric. | La Pointe. |
| Bolt cutter, 1" Acme, dbl. spindle. | Centering machines, single and |
| Bolt cutter, 1 1/2" Landis, double. | double spindle. |
| Bolt cutter, 2-spindle 1 1/2" Landis. | Corrugating machine, steel, 7"x36". |
| Bolt cutter, 1 1/2" Acme, double head. | Reducing or straight, rolls, 6"x36". |

SECOND-HAND MACHINERY

FOR SALE BY

Clark Machinery Co., 1235-45 St. Clair Ave., Cleveland, O.

Bolt threader, 2-spindle Acme, 14".
Boring mill, No. 2 Rockford.
Chucking grinders, No. 6 Bryant.
Drill, 28" Barnes, b. g., p. f.
Lathes, 14" to 24".

Planer, 42"x42"x10' Gray, 2 heads.
Planer, 26"x26"x7' Gray, 1 head.
Punch press, No. 18 Bliss inclinable.
Punch press, No. 1 Sidney inclin.
Turrets, Warner & S. Nos. 4 & 6.

Machine tools for every purpose. Send us your inquiries.

FOR SALE BY

Tubor, Velick & Co., Inc., 628-630 W. Lake St., Chicago, Ill.

Telephones: Monroe 4199-6813. No Branches

PUNCH PRESSES.

No. 4 American Can.
Bliss No. 19.
No. 15 Torris Wold.

Perkins punch presses, 4" str. (20).
No. 15 single end punch.
Long & A. horn punch, cap. 1½x1.

DRILL PRESSES.

14" Excelsior.
20" b. g., p. f., new, \$130.
20" drill presses (40), each \$40.
26" Weigel.
30" Reed-Prentice.
12-spindle Natco drill.

Demco high-speed drills.
Bench type drills.
3' American radial.
3½' Hilbert radial.
3½' Canedy-Otto radial.

MILLING MACHINES.

Nos. 2 & 4 LeBlond plain.
No. 4 LeBlond univ., sgl. pulley dr.
No. 2 Cincinnati universal.

No. 3 Kempsmith.
A number of hand millers.

LATHES.

11"x 5' Seneca Falls.
12"x 5' South Bend.
16"x 6' Hamilton, q. c., (2).
16"x 6' Sidney, q. c., (2).
16"x 6' Monarch q. c.
16"x 8' Canedy-Otto.
16"x 8' National, q. c.

17"x 9' Chard, q. c., (9).
18"x 6' Lehmann, q. c., (2).
24"x10' Canadian, q. c., d. b. g., (3).
22"x10' Cisco, q. c.
25"x10' Sidney.
26"x12' Prentice.

PLANERS.

30"x30"x 8' Fitchburg.
20"x30"x12' Niles-B.-P., 2 heads.

36"x36"x 7' Flather, 2 heads.

SCREW MACHINES.

No. 2 Smith, hand.
Pratt & Whitney, hand, (3).

Nos. 1, 2, 3 and 4 Foster screw mchs.

GRINDERS.

Bath universal, with magnetic clk.
No. 2 Manhattan surface.
Gardner No. 6 disc grinder.

No. 14 Besly, disc.
Emery grinders, #2 and up.

WOOD-WORKING MACHINERY.

Band saws, 36" Famous, new, (10).
Boring mills, Andrew, (3).
Shapers, dbl. spd., Whitney, & Fay.

Saw table and jointer combined, portable.
Swing saws, Porter, (4).

MISCELLANEOUS.

Benches, cabinet makers', (25).
Buffers, U. S. and Westinghouse, 5 h. p., b. b.
Hack saws.
Lockers, steel.
Motors, 75 h. p. G. E., a. c., slip ring, 600 r. p. m., (2).
Motors, a. c. and d. c.
Pressed steel bench legs, (1,000).
Pressed steel hangers and bearings, all sizes.
Pressed steel stools, with backs.

Punch press, No. 3 Thomas.
Punch press, No. 3 Robinson.
Punch press, No. 4 V. & K.
Saw mandrels, #3.
Shaper, 15" Niles.
Shaper, 16" Ames, b. g.
Shaper, 16" Kelly, b. g.
Shaper, 24" Kelly, b. g.
Thread hobber, Pratt & Whitney.
Time clocks, International.
Trucks—1,000 factory trucks.
Woodworking machines.

Leather belting. Pulleys, shafting and hangers.

SECOND-HAND MACHINERY

FOR SALE BY

Marr-Galbreath Machinery Co.,

Angle & bar bender, No. 9 Buffalo.
 Angle rolls, 4x14" & 6x6x14".
 Bending rolls, 10' x16 ga. Bertsch.
 Blowers, No. 3 Stur., pressure.
 Blowers, pos. pressure, 5" outlet.
 Bolt cutter, single, 1 1/2" Foote-Burt,
 Landis head.
 Boring mills, Rockford, 2" & 3" bar.
 Boring mill, 36" Bullard, side head.
 Boring mill, vertical, 72" Betts.
 Boring mills, 51" Niles; 10'-16" Niles.
 Boring mill, vertical 84", 2 heads.
 Boring mill, 42" D. & H., 2 heads.
 Boring mill, 12' Pond, 2 heads.
 Brake, 8' Robinson, 16 ga., hand.
 Brake or press, 10' Robinson, toggle.
 Bulldozers, Nos. 4 & 27 W.-W.
 Bulldozer, No. 7 Ajax.
 Compressor, 8"x8" Ingersoll-Rand.
 Compressor, 10x10" Sullivan, belted.
 Compressor, 1500 cu. ft., 1-R., steam.
 Comp'r, 2500 cu. ft. L. D. G., a. c. mtr.
 Compressor, steam, 864 cu. ft., Bury.
 Compressor, 1300, 888, 599 cu. ft., m. d.
 Crane, 40-ton Morgan, 67' span, 4
 motors, 330 volts, d. c., new.
 Drill, radial, 6' Baush, m. d.
 Drill, radial, 5' Prentice, t. a., m. d.
 Drill, radial, 5' Western, hy. d. c. mtr.
 Drill, radial, 4' Mueller, d. c. motor.
 Drill, radial, 4' American, gear box.
 Drill, heavy gang, 4-sp., 12' table.
 Drill, 3-spindle, Prentice gang.
 Drills, 36" Hoefer; 24" Aurora, s. h.
 Drill, 30" Barnes, sliding hd., b. g.
 Drill, 22" Aurora upright.
 Exhausters, No. 6 Buffalo.
 Filing machine, Rearwin die filer,
 table 16 1/2" x17 1/2".
 Forging mch., 1 1/2" Acme, steel bed.
 Forging machines, 1 1/2, 2, 2 1/2 & 3".
 Gear cutter, No. 11 universal Dwight
 Gear cutter, No. 3 S. & C., auto. 1x1".
 Generator, 100 k.w., 240 v., d. c., con-
 nected to horiz. steam engine.
 Generator, 85 k. w., 240 v., d. c., con-
 nected to horiz. steam engine.
 Grinder, No. 60 Heald internal.
 Grinder, plain cyl., No. 12 Modern.
 Grinders, No. 1 Cincinnati, c. & t.
 Grinder, Yankee drill, style A.
 Hack saw, 6x6 Peerless.
 Hack saw, No. 5 Marvel, cap. 6x6".
 Hack saw, No. 7-KC Atkins, 8x8.
 Hammer, 100 lb., single fr., steam.
 Hammers, sgl. fr., 350, 600, 1100, 1500.
 Hammers, 40, 80, 100 lbs. Bradley.
 Hammer, 125 lb. Bradley upr. strap.
 Ice machine, 1-ton, with motor.
 Lathe, 48"x27" Pond, g. h., a. c. mtr.
 Lathe, 42"x32" Am., grd. hd., m. d.
 Lathe, 30"x26" Am., g. h., a. c. mtr.
 Lathe, 18"x10" Porter, s. b. g., c. r.
 Lathe, 18"x8" Lodge-S., g. h., pan.
 Lathe, 16"x8" Bradford, pl. change.

58 Water St., Pittsburgh, Pa.

Lathe, 16"x6" Lodge-S., q. c. g.
 Lathe, 16"x6" Flather, taper att., ch.
 Lathe, 15"x6" South Bend.
 Lathe, 14"x6" Monarch, q. c. g., t. a.
 Lathe, 13"x6" Star, q. c. g., chuck.
 Lathe, 12"x8" Reed-P., g. h., s. p. d.
 Lathe, speed, 11"x4" Prentiss, t-rest.
 Miller, No. 3 Fox, hand, 24"x6"x14 1/2".
 Miller, No. 0 1/2 Cin. pl., 18"x6"x15".
 Miller, No. 3 LeBlond, pl. ind. hd.
 Miller, Hendey Lincoln No. 2 1/2.
 Miller, Knight duplex, tbl. 8 1/2"x32".
 Miller, No. 0 Kempsmith universal.
 Miller, No. 3 Cincinnati, plain 32"x9x20.
 Miller, vertical No. 0 & 1 Bickett.
 Miller, vertical, Becker "C" & 4.
 Miller, bench, No. 3 Burke.
 Millers, hand, Whitney, (2).
 Motor, 3, 2 h. p., 1 phase, 60 cycle.
 Oil separator, No. 2 Roper, belt.
 Pipe machines, 12", 6" & 2" Jarecki.
 Planer, 120"x120"x36", 4 heads, m. d.
 Planer, 74"x54"x24" Pond, 4 hds. m. d.
 Planer, o. s., 72"x72"x18", 3 hds., m. d.
 Planer, openside 42"x42"x16", 3 hds.
 Planer, Powell, 42"x42"x16", 4 hds.
 Planer, 26"x26"x8" Niles, 1 head.
 Planer, 24"x24"x5" New H., 1 hd.
 Press, No. 29 Bliss, o. b. i., plain.
 Press, No. 2 B. & O., o. b. i. plain.
 Press, No. 10 Bliss o. b. i., bench.
 Press, No. 11 Perkins, pl. trim., 4" str.
 Press, No. 82 Consolidated forming.
 Punch, No. 124-A Niagara, 15" t., 1 1/2".
 Punch & shear, hand, Schatz, 1 1/2".
 Punch & s., No. 21, & A 30" tht., a. j.
 Punch & shear, 14" & 72" tht., equal
 No. 12 W. W.
 Riveter, 1" Shuster, style A.
 Riveter, 80-A Grant, cap 1 1/2".
 Riveter, Allen, jaw. 36x20x1 1/2" rivets.
 Rivet hammers, 4-A, 5-A, high spd.
 Rolls, bending, 40"x1", m. d.
 Saw, cold, No. 18 Wagner, 16" saw.
 Saw, cold, No. 11 1/2 Higley, 14" saw.
 Shaper, 25" Smith & Mills, b. g.
 Shaper, 16" Cincinnati, b. g.
 Shapers, 14" Steptoe; 24" G. & E.
 Shear, single end, 9" throat, cap. 3 1/2"
 round, motor drive, new.
 Shear, Quickwork, Nos. 3 & 6 m. d.
 Shear, Niagara 16-A ring & circle.
 Shear, rotary, 1" Lennox, 8' gap.
 Straightener, No. 2 Kane & Roach.
 Testing mchs., 100,000, 200,000 lbs.
 Tumbling barrel, Globe, 18"x15".
 Turret lathes, Nos. 1 & 2 W. & S.
 Turret lathe, 2x24" J. & L.
 Turret lathe, No. 4 Wood Tilted.
 Turret lathe, No. 1 Bardons & O.
 Turret lathe, Libby 21", motor drive.
 Upsetter, 3" Acme, semi-steel, A-1.
 Valve mche., 28" Pottstown, 3-w., m. d.
 Valve tapper, 4" Pottstown, 3-w., m. d.
 Wheel press, 300 ton, 100" bet. bars.

SECOND-HAND MACHINERY

FOR SALE BY

Edward L. Klauber,

320 South Third St., St. Louis, Mo.

Centering machines, Whiton (2).
Drill press, 34", b. g., s. h., t. a.
Drill press, 24" Aurora, s. h., b. g.
Drill press, 3 spindle Dwight Slate.
Drill, S. C. H. 42" wall type radial.
Drill, 20" Hoefer, w. & l. feed.
Die head, Landis, cap. 2" pipe.
Gear hobber, No. 1 Farwell, 14" cap.
Grinder, Brown & S. No. 11 plain.
Grinder, B. & S. No. 3 cut. & reamer.
Grinder, Besly No. 10 disc, ring wh.

Lathe, 14"x6" Monarch, d.b.g., q.c.g.
Lathe, 15"x7" South Bend, plain chge.
Lathe, 16"x8" Monarch, d b.g., q.c.g.
Lathe, 16"x8" Lodge S., d.b.g., q.c.g.
Lathe, 21"x8" LeBlond hvy. duty, q.c.g.
Lathe, 24"x10" Lodge & S., q. c. g.
Lathe, 24"x10" Wickes, d.b.g., semi q c.
Millers, No. 0 Burke, bench type.
Punch press, No. 2 Rockford, o.b.i.
Punch press, No. 3 Toledo, o. b. i.
Turret lathe, W. & S. No. 2 hol. hex.

FOR SALE BY

B. L. Saltzman,

524-526 W. Van Buren St., Chicago, Ill.

DRILL PRESSES.

21" Champion, new.
20" Rockford, 4-spindle.
20" Plain.
18" Sibley, b. g., power feed.
16" Leland Gifford.

12" Avey, 1-spindle.
12" Plain.
6" Plain.
Bench and post drills.

GRINDERS.

15" Disc on pedestal, tilting table.
Heald, with 8" magnetic chuck.
Prentice drill grinder.

Tool room grinder, Auto. Mch. Co.
No. 70 Crescent, with tool rest and
countershaft.

LATHES.

18"x9" Chard, new, q. c. g., 4'-4" cen.
15"x8" Shepard 95% new, all geared
head, arranged for motor drive.

16"x8" Bradford, b. g., comp. feed.
14"x6" Phillip Smith, q. c. g.
14"x5" Phillip Smith, b. g.

PUNCH PRESSES.

Heartley, back geared, 4" stroke.
Bliss Nos. 24 & 14" str., Stiles type.
Bliss No. 3, 14" stroke, Stiles type.

Michigan No. 23 geared, arranged
for horning press, 2" stroke.
No. 00 La Salle, bench type, 1" str.

PUNCHES AND SHEARS

No. 136 Niagara punch & shears,
cap. 3" in 3" throat 24".
Kalamazoo dble. end punch & shear,
capacity 1" in 1".

No. 3 Little Giant punch & shear,
capacity 3" in 3".
Hand lever punch, 1" cap. 8" throat.
No. 4-A Doty hand lev. slitting shear

TINNERS' TOOLS.

Brakes, 8' & 10', D. & K., steel.
48"x3" geared slip roll.
36"x3" new roller.
26"x24" roller.
No. 13 Niagara ring & circle shear,
20 ga.
No. 10-P Marshalltown rotary shear.

No. 16-P Marshalltown rotary shear.
36" Niagara square shear.
36" Niagara power square shear.
10 Auld power square shear.
36" Niagara power gap shear.
Yoder power wiring, beading, and
forming machines.

MISCELLANEOUS.

Air comp., No. 2 Curtis, 24"x24".
Arbor press, No. 3 Greenerd.
Blower, No. 3-P American, 10" inlet,
74" exhaust.
Blower, No. 13 Connersville, 4" opn.
Blowers, Nos. 40 & 45 Ilg, a. c.,
direct connected.
Blower, No. 50 Ilg, d. c., direct con.
Bolt threader, Acme, 2 heads, 4" cap.
Centering machine, No. 1 P. & W.
Centering machine, Binghamton.
Cold saw, power, 4" cap.
Electric pyrometers, Hoskins, range
32-2000 deg. F., 4 stations.

Electric pyrometer, Bristol, range
0-2000 deg. F.
Gear generators, 6" & 18" Gleason.
Oil spreaders, for punch press, rolls,
8"x33".
Screw mch., Hartford auto., 3" cap.
Screw mch., Pratt & W., 3" cap.
Screw mch., No. 1 Foster, 1 1/2" spdl.
Screw press, Newell, 7" throw.
Shaft straightening press, 4" throw.
Shaper, Rockford 24".
Time recording system, Gisholt
"Periodograph," 8 stations.

Motors and Generators, a. c. or d. c.—Write us.

SECOND-HAND MACHINERY

FOR SALE BY

Surplus Material & Machinery Co., 8735 Kercheval, Detroit, Mich.

Bar shear, Carlin, 24" capacity.

Beader, Niagara No. 6.

Bending rolls, slip, 6x44"

Drill, index, 30" Baker.

Grinder, cyl., Baxter D. Whitney.

Grinder, plain, 12-42 Landis.

WANTED TO BUY.

Several No. 0, No. 00 & No. 2 Brown & Sharpe Automatic Screw Machines.

FOR SALE BY

A. F. Strafer.

30 Church St., New York City

BORING MILLS, VERTICAL AND HORIZONTAL.

12" Betts, geared feed, belt drive.

96" Betts vertical, arranged motor dr.

72" Niles-B.-P., heavy duty, m. d.

72" Bullard, a. c. motor drive.

12" Betts, heavy modern, m. d.

30" King, single turret head.

42" Bullard, 2 h., rapid traverse.

Bement-M. horiz., 6" bar, floor type.

34" bar, Lucas type, horizontal.

6" Bar Barrett cylinder borer.

DRILLS, UPRIGHT AND RADIAL.

6' Mueller plain, d. c. motor drive.

7' 6" & 9' Baush, belt drive.

6' Cincinnati Bickford, full univ.

D-3 Colburn heavy duty, s. p. d.

310 Baker, 24" capacity, s. p. d.

6-spindle, 20", Barnes.

26" Reed-Prentice, motor drive.

28" Mechanics upright, like new.

GRINDERS

No. 60 Heald cylinder, low price.

6"x32" Norton plain.

10"x36" Norton plain.

10"x24" Landis plain, self contained.

10"x24" Landis universal.

3"x18" Norton plain.

No. 11 Brown & Sharpe, 6"x32".

No. 3 B. & S. tool cutter.

GEAR CUTTERS.

36" G. & E., spur and bevel.

26" B. & S. No. 3, spur gears.

24" Bilton automatic.

60"x11" Brown & Sharpe No. 5.

LATHES

50"x36" Bement-Miles, t. g.

50"x16" Fifield, belt drive.

50"x30" Pittsburgh, h. d., q. c.

44"x21" Niles-Bement-Pond, t. g.

60"x16" New Haven, t. g.

24"x10" R. K. LeBlond, taper att.

21"x10" LeBlond, heavy duty.

27"x10" LeBlond, turret on shear.

TURRET LATHES.

34"x36" Acme, flat, modern, geared head, chuck equipment.

18" Libbey, s. p. d., rapid traverse.

24" Gisholt, motor drive.

28" Gisholt, fine condition.

24"x26" J. & L., bar equipment.

34"x36" Jones & Lamson, bar equipment, high serial.

No. 4 Bardons & Oliver (6).

24"x26" Greenlee, like new, cheap.

14"x8" American q. c. engine lathes, turret on shear.

MILLING MACHINES.

No. 4 Cincinnati plain, cone type.

No. 3 Kempsmith univ., cone.

No. 2 Brown & Sharpe plain.

No. 3 Brown & Sharpe plain, cone.

No. 4 Brown & Sharpe plain.

13-B Brown & Sharpe, mfg. type.

No. 3 Cincinnati vert., high power.

U. S. Mfg. Co. hand miller.

PLANERS.

12"x25" 4 h., belt drive.

30"x8" D. & H. open side, 2 heads.

24"x24"x12" American, 2 heads.

54"x16" Wm. Sellers, 4 heads, b. d.

36"x36"x12" Gray type, 2 heads.

24"x24"x6" Gray, 1 head.

PUNCHES AND SHEARS.

No. 4 Hilles & Jones, double, 48" throat, motor drive.

No. 6 Hilles & Jones, 60" thrt., m.d.

No. 6 Quickwork, 14" capacity.

25-U Buffalo combination.

Angle shear, Covington, 6x6x14.

Angle shear, 8"x8" armor plate.

Lennox rotary, 44" throat, 14" cap.

MISCELLANEOUS.

Bending rolls, 4"x20" Hilles & Jones.

Bending rolls, 4"x7" Wm. Sellers.

Bending rolls, 4"x10" 6" Southworth.

Bolt cutter, Landis, 14", double.

Broaching machine, Nos. 2 & 3 LaPointe.

Crane, 50-ton, 88' spar, P. & H., d.c.

Drill chucks, 1" capacity, new.

Fire pump, 1000 gal. Knowles, atm.

Flanging clamp, 96".

Forging mche., Ajax 14" steel bed.

Hammer, 9" McDougal & Potter.

Hammer, No. 4, type "I", Nazel.

Slotter, 18" Newton, 48" table.

Surface plates, B. & S. 12"x18".

Tapping attach., Errington 1" cap.

SECOND-HAND MACHINERY

FOR SALE BY

Service Shop Equipment Company,

No. 206 Elm St., - - - Wyoming, Cincinnati, Ohio

Three brand new fully guaranteed "Willard" Tool Room Lathes.

13"x6" quick-change, 3-step cone; list, \$765; our price.....\$615.

15"x6" quick-change, 3-step cone; list, \$850; our price.....685.

15"x6" 24" gap, semi-quick, cone head, list, \$885; our price.....695.

Customary discount allowed to legitimate Machinery Dealers.

FOR SALE BY

McCoy-Brandt Machinery Co.,

210-14 Penn Ave., Pittsburgh, Pa.

Bending rolls, 10'x18" Wickes, m. d.

Bending rolls, 16'x18" Wickes, m. d.

Bolt cutter, 14" Acme, belted.

Boring mill, 10" Niles, 2 heads.

Boring mill, 64" Betts, 2 heads.

Boring mill, 48" Colburn, 2 heads.

Boring mill, 6" bar, Niles horiz.

Bulldozers, Nos. 5 & 30 W.-W.

Drills, radial, 5' Prentice, s. p. d.

Forging machines, 2" and 3".

Grinders, 12"x48" Cincinnati plain.

Grinder, No. 4 Gardner double disc.

Grinder, No. 60 Heald cylinder.

Drills, 30" Colburn, No. 2 h. d.

Gear cutters, 36" G. & E., spd.

Gear generator, bevel 8" Gleason.

Lathe, 18"x8" Sidney, h. d., q. c. g.

Lathe, No. 5 Rivett precision, tur., etc.

Lathe, 16"x10" L. & S., cone, taper.

Lathe, 24"x26" American, q. c. g., m. d.

Lathe, 30"x18" L. & S., m. d., t. a.

Lathe, 48"x26" Bridgeford, m. d.

Millers, horiz., Nos. 3 & 5 Cincinnati.

Miller, vertical, No. 1 B. & S., m. d.

Miller, No. 24 Rockford pl., s. p. d.

Miller, Nos. 0, 14, 2 & 3 plain, cone.

Millers, Nos. AB-1 Becker vert. s. p. d.

Pipe machines, 12", 10", 8", 4" & 2".

Planer, 30"x30"x8" N. B. P., 1 head.

Punch, multiple, No. 32 W.-W.,

ram 12' 2" long, 350-ton pressure.

Punch, 36" Cleveland 14"x1", m. d.,

arch. jaw.

Punch, 24" Cleveland 4"x1", m. d.,

arch. jaw.

Riveter, 36" reach, 21" gap, 10" cyl.

Rolling mills, 12" bar & 16" reduct.

Shears, guil., cap. 24" and 2" and 1".

Shear, splitting, 24" throat Ryerson,

1/4" plate

Slotter, 12" Newton, crank, cheap.

Straightener, Abramsen, cap. 1/4" to

34" bars, m. d.

Straighteners, Nos. 1 & 2 Kane & R.

Testing mche., 200,000 lb. Riehle.

Turret screw mches., No. 0 Foster.

FOR SALE BY

Cincinnati Machinery & Supply Co., 215 E. Pearl St., Cincinnati, O.

SHAPERS.

12" Juengst, complete, \$175.

16" Cincinnati crank shaper.

20" American crank shaper.

26" Ohio crank shaper.

28" Gould & Eberhardt, crank.

20" Steptoe crank shaper, \$275.

MILLING MACHINES.

No. 1 U. S. hand millers, (5).

No. 2 Cincinnati plain, \$285.

No. 3 Brown & Sharpe plain.

No. 4 Brown & Sharpe plain.

No. 3 Cincinnati vert., high power'd.

LATHES.

14"x 6" LeBlond, q. c.

14"x 6" Lodge & Shipley, q. c.

16"x 6" Reed, geared head, q. c.

18"x 8" Monarch, \$325.

20"x10" Lodge & Shipley, q. c.

27"x18" Lodge & Shipley, q. c.

32"x16" Schumacher & Boye, q. c.

PLANERS.

24"x24"x 8' Gray, \$350.

26"x26"x 8' Gray.

30"x30"x20' Hamilton.

48"x48"x14' Gray.

GRINDERS.

No. 60 Heald cylinder grinders.

10"x20 Landis.

10"x30 Landis.

No. 2 Brown & Sharpe universal.

RADIALS.

3' Bickford, cone drive.

3' Prentice, sgl. pulley, gear box.

24" Gang, single pulley.

5" American.

Complete stock of machinery and supplies, new and used.

Write us your needs.

SECOND-HAND MACHINERY

FOR SALE BY

Bennett Machinery Co.,

Brake, 8' Chicago, 10 gauge.
Cold saw, 42" Newton, heavy.
Drills, 14" to 30" Barnes and Rockf'd.
Keyseater, No. 4 Mitts & Merrill.
Lathe, 48" x 28' Pond.

30 Church St., New York City

Miller, univ., No. 2 Milwaukee, cone.
Miller, univ., No. 3 Hendey, cone.
Planer, 84" x 12' Pond, 4 head, belt.
Plate planer, 18' Niles.
Radial, 4' Dreses, cone drive.

FOR SALE BY

Herman L. Winterer,

943-53 N. Front St., Philadelphia, Pa.

LATHES.

43" x 17' 44" Bement-Miles.
37 1/2" x 14" Johnson d. b. g., q. c. f., t. a.
32" x 12" Pittsburgh, heavy duty, q. c. g.
27" x 12" Bullard.
26" x 11" Wickes, q. c. g.
28" x 10" Niles, q. c. g.,
25" x 14" Hendey, q. c. g., taper attachment, oil pan, (3).
24" x 14" Porter.
21 1/2" x 8" LeBlond.

20" x 8" Walcott, d. b. g., q. c. g., (3).
20" x 8" Whitcomb Blaisdel, q. c. g.
19" x 10" Draper, patent head.
18" x 8" Davis, q. c., d. b. g.
18" x 7" Chard, d. b. g., semi q. c. g.
18" x 6" to 8" lathes, (6).
16" x 8" Greaves & Klusman, b. g., t. a.
14" x 8" Filsmith, q. c. g.
14-22" x 6" Barnes extension gap.
And many others.

TURRET LATHES.

34" x 28" Pond, triangle.
3x36" Pratt & Whitney, hollow hex.
20x7' 6" Pratt & Whitney, back grd.
20x7' Bridgeport, 24" h. s.
19" x 7' Fay & Scott, back grd.
No. 22 1/2 Garvin Monitor.

No. 3 Kempamith.
14" x 6" Warner & Swasey.
16" x 6" Johnson, back grd.
No. 3 Bardons & Oliver back grd.
14 1/2" x 5" 3" Pratt & Whitney, (2).
No. 3 Foster Kimball.

DRILL PRESSES.

42" Gang radial, s. p. speed box.
40" Barnes horizontal radials, (2).
36" Bickford radial, circular base, motor driven.
28" Rockford, q. c. g. feed, (2).

34" Barnes, s. h., geared face, comp. table.
24" Sibley & Ware, sliding head.
4-sp. type C, Taylor & Fenn, pwr. fd.
Drill presses, assorted sizes.

MILLING MACHINES.

No. 5 Cincinnati, table 94" x 50 1/2".
No. 15 Garvin, table 12x42".
No. 3 Becker-Brainard, new model, q. c. g., vertical attachment.

No. 3 Hendey-Norton, q. c. g.
No. 5-C Becker vert., rotary table.
No. 1 Milwaukee plain.

PLANERS AND SHAPERS.

12' x 10' x 25" Sellers planer, 4 heads.
48" x 31" x 8" Sellers, 2 heads.
30" x 30" x 8" Putnam planer.
48" Morton draw-cut shaper.
39" Pedrick & Ayer, open side.

16" Hendey shaper, shifting belt.
16" Potter & Johnston crank shaper.
15" Lodge & Davis shaper.
15" Potter & Johnston shaper.
14" Warren shaper.

MISCELLANEOUS.

Boring mill, car wheel, 60" Newton.
Boring, drilling and milling machine, 17 1/2" Bement Niles horizontal.
Boring mill, No. 1 Sellers, horizontal, 23" bar.
Boring mill, No. 3 Binsse, horizontal, 24" bar.
Grinder, 13 1/2" x 5" Landis universal.
Grinder, disc, No. 17 Besly.
Hammer, 15 lb. Bradley helve.
Hammer, 28 lb. Little Giant, m. d.
Hammer, 40 lb. Bradley, helve.
Hammer, 60 lb. Hotchkiss.
Hammers, 60 lb. Bellefonte upright; 2
Hammer, 500 lb. Merrill board drop.
Hammer, 750 lb. Merrill board drop.
Keyseater, 18" stroke Morton.
Pipe machine, 4" Cox.

Molding machine, 24" Taber, with roll over.
Punch presses, all sizes, (55).
Punch, multiple, No. 5 H. & J., gate pat., 86".
Punch & shear, No. 2 H. & J., dbl. end, 20" th. cap., 1 1/2" in 1".
Punch, No. 2 H. & J., 15" th., arch. jaw, 1 1/2" in 1".
Punch, single end, 31" th., arch. jaw, cap. 1" in 1".
Punch, horiz., L. V., grd., cap. 1".
Punch & shear, Industrial Wks. d.e., capacity 1" in 1"; shearing 1" x 6".
Riveter, air, 6" gap Allen, cap. 1 1/2".
Slotter, 14" Niles.
Tooth rounding mche., Schuchardt & Schutte.

Large assortment of General Machinery. Send for complete Price List.

SECOND-HAND MACHINERY

FOR SALE BY

Hill, Clarke & Co., Inc., 156 Oliver St., Boston 9, Mass.

AUTOMATICS.	
Brown & Sharpe Nos. 0 and 2.	
BORING MILL.	
Niles-Bement-Pond 53" vertical with two swivel heads.	
RADIALS.	
Western, 4' arm.	Prentice, 5' arm.
KEYSEATER.	
Mitts & Merrill No. 5 well equipped.	
PLANERS.	
Gray 24"x6', one head.	Whitcomb-Blaisdell 30"x8', 2 heads.
Cincinnati 24"x6', one head.	D. W. Pond 36"x16', 2 heads.
Whitcomb-Blaisdell 24"x8', 2 heads.	
MILLING MACHINES.	
Milwaukee No. 1-A mfg., single overarm.	Brown & Sharpe No. 2B plain.
Milwaukee No. 1B pl., sgl. overarm.	Milwaukee No. 3B pl., sgl. overarm.
Brown & Sharpe No. 1 1/2 plain.	Cincinnati No. 3 vertical, high pwr.
	Garvin No. 1 universal.
TURRET LATHES.	
Warner & Swasey No. 2A universal.	
PIPE MACHINES.	
Bignall & Keeler, 8" capacity.	
SHAPERS.	
Rhodes 3 1/2" vertical.	Smith & Mills 20" crank.

FOR SALE BY

Peninsular Machinery Co., 429-31 E. Jefferson Ave., Detroit, Mich.

LATHES.

13"x 5' Blount speed lathe.	17"x3' LeBlond rapid product'n, m. d.
13"x 5' South Bend, (2).	21"x11' LeBlond, all geared, (2).
13"x 6' Willard, (3).	21"x12' LeBlond line bearing.
13"x 6' Sebastian, (4).	26"x10' LeBlond crankshaft.
14"x 6' Carroll-Jamieson.	Adams short-cut lathe, with taper.
14"x 6' Reed, l. c. g., (2).	3 1/2"x36 Lo-Swing.
16"x 8' Bradford, l. c. g.	

DRILLING MACHINES.

3-spdl. Henry & Wright, h. s., b. b.	25" Barnes 4-spindle gang.
22 1/2" Sibley all-geared, p. f.	No. 3 Baush multiple.
28" Barnes, s. h., taper.	

MILLING MACHINES.

Briggs type A, (2).	No. 0 Rockford plain.
No. 32 Kempsmith.	No. 0 Steptoe plain.
No. 33 Kempsmith plain.	No. 3H LeBlond plain, cone type.
No. 3 Brown & Sharpe plain.	No. 24 Rockford univ., with vert. att.

TURRET SCREW MACHINES.

14" Defiance, f. h.	No. 3 Foster f. h. turret lathes, (2).
2 1/2"x26 Pratt & Whitney, a. c.	

GRINDERS AND POLISHERS.

No. 10 Brown & Sharpe plain.	No. 26 Besly, double spindle, m. d.
No. 190 Greenfield universal.	No. 5 Oliver m. d. drill grinder.
No. 50 Heald cylinder.	No. 4 Webster & Perks polishing.
20" Blount wet grinders.	Bennett & O'Connell dbl. sp. pol.
No. 15 Bryant, motor drive.	No. 23-B Valley City disc.

MISCELLANEOUS.

Band saw, 6" Napier.	Lapping mchs., Bethel-Player, (2).
Centers, bench, Brown & Sharpe, (3).	Metal cutter, No. 1 Gray.
Cutting-off mchs., 4" Huribut-R., (2).	Press, No. 3 L. & J., o. b. i. flywheel.
Gear cutter, No. 13 B. & S., bevel.	Press, No. 0 L. & J., o. b. i. flywheel.
Gear generator, 6" Gleason, bevel.	Screw slotter, No. 1 National Acme.
Gear generator, 18" Gleason, bevel.	Shaper, 7" Rhodes horizontal.
Gear hobber, No. 4 Farwell auto.	Tooth round's, 12" Rochester aut. (2).
Gear tester, bevel, Gleason.	Tumbling barrels, No. 3-S Globe, (2).
Hammer, drop, No. 5 Williams-W.	Welder, No. 40A Thompson, butt.

SECOND-HAND MACHINERY

FOR SALE BY

Botwink Brothers, Inc., - 67 Water St., New Haven, Conn.

GRINDERS.

10—Heald No. 70 internal grinders with countershafts, A-1 condition. Price \$450.00 each, net, f. o. b. New Haven, Conn.

FOR SALE BY

Reliance Machinery Sales Company

Brighton Road at Pennsylvania Ave., - **Pittsburgh, Pa.**

Boring mill, 30" Bullard, 1 head.
Boring mill, 34" Colburn, 1 head.
Boring mill, 42" Bullard, 2 heads.
Boring mill, 54" Bullard Maxi., m.d.
Boring mill, 72" Betts, 2 heads.
Brake, 60" D. & K., 14 gauge.
Broach, Nos. 3&4 LaPointe (Hudson)
Buffer, 2 h.p. U. S. Elec., 220-3-60.
Bulldozer, No. 5 Williams & White.
Chamfering machine, Warner & S.
Die slotter, 3 1/2" stroke, Garvin.
Drill, 12" Leland-G. 6-spdl., m. d.
Drill, 13" Fosdick 6-spdl., m. d.
Drill, 16" Fosdick, 6-spdl., m. d.
Drill, No. 4 Foote-Burt 4 spindle.
Drill, Reed, 4-spindle, cap. 1/2".
Drill, Baush, 8-spindle, No. 3 taper.
Drill, No. 30 Natco, 12-sp., No. 3 tap'r.
Drill, No. 13 Natco, 16-sp., No. 3 tap'r.
Drill, 20" Barnes, camel back.
Drill, 21" Cincinnati, sliding head.
Drill, 24" Hoefel, sliding head.
Drill, 26" Barnes, camel back.
Drill, 36" Snyder, sliding head.
Drill, No. 310 Baker heavy duty.
Drill, Model F Turner auto. turret.
Drills, 20" & 24" Foote-Burt, h. d.
Gear cutter, 36"x10" G. & E., s. p. d.
Grinder, type RA U. S. Electric.
Grinder, type KKA U. S. Electric.
Grinder, 20" Besly disc, m. d., 220-3-60.
Grinder, Oliver drill, m. d., cap. 1/2".
Grinder, No. 70 Heald internal.
Grinder, No. 5 Bridgeport wet tool.
Grinder, No. 3 Brown & S. univ.
Grinder, 6"x32" Norton plain.
Grinder, 12"x30" Modern plain.
Hammer, 80 lb. Bradley cush. helve.
Hammer, No. 4 Beaudry, mtr. dr.
Lathe, 12"x 6" Seneca Falls.
Lathe, 12"x10" Davis tool r'm. q. c. g.
Lathe, 14"x 6" Seneca Falls, q. c. g.
Lathe, 14"x 6" Hendey, tie bar.
Lathe, 14"x 8" Whitcomb-Blaisdell.
Lathe, 17"x8" Sidney, hvy. duty, q. c. g.
Lathe, 18"x8" L. & S., q. c. g., m. d.
Lathe, 18"x8" Rahn & Larson, q. c. g.
Lathe, 18x10" Reed, q. c. g., d. b. g.
Lathe, 22"x10" Putnam, hvy. duty.
Lathe, 26"x12" Bridgeford hvy. duty.
Lathe, 27"x26" Schumacher-B., q. c. g.
Lathe, 30"x12" Johnson, triple grd.
Lathe, 30"x16" New Haven, p. c. g.
Lathe, 33"x12" Pond, triple geared.
Lathe, 34"x12" LeBlond, triple grd.
Lathe, 38"x50" New Haven, dbl. hd.
Lathe, 42"x31" Pond, triple geared.
Miller, No. 1 U. S., hd., complete.
Miller, No. 2 Cincinnati h. p. vert.
Miller, No. 2 Cincinnati, vertical attachment.
Miller, No. 3 Hendey plain.
Millers, models B & C Becker, vert.
Millers, Sellers, Lincoln type, (2).
Millers, No. 25 Becker plain, (3).
Pinion rougher, 36 HM Gould & E.
Pipemachine, B. & K., 1/2" to 2", m. d.
Pipe machine, Merrill, 1 1/2" to 6".
Pipe machine, 8" Cox, cap. 2 1/2" to 8".
Pipe machine, Merrill, 2 1/2" to 12".
Pipe machine, 12" Cox, cap. 6" to 12".
Pipe machine, 16" Cox, cap. 8" to 16".
Planer, 24"x24"x 6" Gray, 1 hd.
Planer, 36"x36"x8" Cincinnati, 1 hd.
Planer, 36"x36"x8" Clevel'd openside.
Planer, 36"x36"x10" Pond, rev. m. d.
Planer, 48"x48"x12" Clevel'd openside.
Planer, 60"x60"x16" Betts, 3 heads.
Planer, 72"x72"x18" Detrick & Harvey open side, m. d.
Press, No. 10 Bliss, reducing, 4" str.
Press, No. 23 Stoll, homing.
Press, No. 67 Niagara screw press.
Presses, Nos. 61 & 62 Bliss, o. b., f. w.
Press, Ferracute DD2, o. b. i. cam.
Press, No. 65 Consolidated, 5" str.
Press, No. 305 Bliss straight sided.
Punch, Reade s. e. 1/2"x1 1/2", arch. jaw.
Punch, Wickes, 48" thrt., cap. 1 1/2"x1".
Radial drills, 4" & 5" Prentice plain.
Reduction gear, Foote, 50 to 1.
Sand blast, Pangborn type EA.
Saw, Williamson metal band.
Saws, American metal sw., m. d., (2).
Screw machines, Nos. 1 & 2 Warner & Swasey, plain head.
Screw machines, No. 4 Warner & Swasey, g. f. h., power feed, (3).
Shaper, 24" Cincinnati b. g. crank.
Shear, No. 2 Quickwork rotary.
Shear, 72" Niagara, 14 gauge.
Shear, squaring, 96" power, 20 ga.
Tapping mch., 2" Baker, type F-4.
Tapping mch., 8" Baker, type K-11.
Tooth rounder, 12" Rochester.

Our warehouse is full of bargains. What have you for sale?

SECOND-HAND MACHINERY

FOR SALE BY

J. E. Haetten & Co., Inc., - 50 Church St., New York, N. Y.

Automatics, 8-17" Cleveland model B, (40), each.....	\$ 100.
Boring mill, 48" Colburn, 2 head, geared feeds.....	600.
Boring mill, 24" Bullard New Era.....	2650.
Boring mill, 72" Cincinnati vertical, heavy duty.....	5000.
Cranes, 25-ton N. B. P. 67" span, 4 motors each, like new.	
Drill, 4' Niles semi-universal radial, scarcely used.....	1500.
Engraver, E-3 Keller die sinker, motor, like new.....	900.
Generator, 300 k. w., Westinghouse Parsons turbo, jet condenser.....	1750.
Grinder, 50" Gardner No. 24, with exhaust.....	450.
Grinders, No. 65 Heald auto. cylinder, like new (7) each.....	950.
Grinder, 15x15x10" Norton table type, surface, never used.....	3750.
Hammer, 200 lb. Gould & Eberhardt, drop.....	250.
Lathe, 50" x20" Putnam, single back geared, compound rest.....	500.
Lathe, 48" x28" Lodge & Shipley, t. g., q. c.....	2500.
Lathe, 38" x33" Pond, l. c. g., t. g., 2 carriages.....	1750.
Miller, 11x40 work surface, Lincoln type, good condition.....	200.
Miller, 30" x20" x16" Ingersoll, 4 heads, A-1.....	2000.
Miller, No. 4 Pratt & Whitney vertical, g. h., heavy motor.....	2500.
Miller, 54" x20" x20" Ingersoll, 8 heads, a. c. motor 98%.....	6500.
Miller, No. 2 Owen universal, all attachments.....	800.
Oil separator, 24" American, belt drive.....	100.
Press, 92B Toledo, 36" wide, 34" stroke, geared.....	1050.
Shear, No. 5 Canton low knife, 26" blades.....	1200.
Turret, 2x26 Pratt & Whitney, bar work, and motors.....	850.
Turrets, No. 6-A Potter & Johnston, serials 15,700, (2), each.....	500.
Turret, 24" Greenlee, 34" hole, belt drive, 95%.....	900.

FOR SALE BY

Jones Machine Tool Co., 528-532 E. Front St., Cincinnati, O.

LATHES.

16"x 6' LeBlond, q. c. g.....	\$ 375.	20"x10' Lodge & Shipley, q. c. g. #	850.
16"x 8' Hendey, q. c. g. & t. a.....	975.	30"x12' Houston Stam., q. c. g.....	750.
18"x10' Reed Prentice, grd. hd.....	775.	26"x12' Reed, l. c., t. a.....	500.

MILLING MACHINES.

No. 14 Valley City universal.....	\$ 500.	No. 3 Cincinnati plain.....	\$ 950.
No. 14 Cincinnati universal.....	675.	No. 3 LeBlond plain.....	900.
No. 2 Hendey universal.....	775.	No. 3 B. & S. vert., s. p. drive	1250.

RADIALS AND DRILL PRESSES.

24" American, s. p. drive.....	\$ 675.	72" Drees, motor drive.....	\$1500.
48" American, s. p. drive.....	1200.	24" Hoefler, sta. head.....	175.
42" Gang, cone drive.....	375.	24" Rockford, sliding head.....	225.
48" Bickford, cone drive.....	475.	30" Cincinnati, sliding hd., t. a.....	325.
72" Niles, cone drive.....	750.	42" Bickford, stationary head.....	225.

PUNCH PRESSES AND SHEARS.

No. 2 Niagara.....	\$ 140.	No. 4-Verdin, b. g.....	\$ 675.
No. 5 Niagara, b. g.....	475.	No. 85 Bliss, d. b. g.....	1500.
No. 2 Swain horn press.....	275.	No. 6-A Willard, o. b. i.....	475.
No. 6 Whiting, single end.....	475.	No. 516A Toledo sq. sh., 16 ga.....	275.

PLANERS AND SHAPERS.

24"x 6' Powell I head.....	\$ 600.	16" Smith & Mills shaper.....	\$ 325.
30"x 8' Gray, 2 heads.....	850.	25" Smith & Mills, b. g.....	875.
42"x26" Cincinnati, 2 heads.....	2250.	21" American b. g. shaper.....	775.

MISCELLANEOUS.

Chain hoists, various sizes, (50).....		Hammer, 100 lb. Bradley.....	\$ 275.
Gear cutter, 26" Cincinnati No. 3.....	\$ 350.	Hydraulic wheel press, 175-ton	
Gear cutter, 48" B. & S. No. 4.....	750.	Caldwell.....	650.
Gear hobber, 24" S. & S.....	550.	Keyseaters, various sizes.....	
Gear hobber, Barber-C. No. 12.....	1075.	Mill, 36" Bullard vertical.....	1500.
Grinder, 10x50 Norton.....	475.	Mill, Lucas No. 21 horiz. 24" bar.....	1500.
Hack saw, 9x9 Peerless.....	225.	Slotter, 10" Niles vertical.....	500.
Hammer, steam, 800 lb. Niles.....	800.		

Write for our latest Stock List.

SECOND-HAND MACHINERY

FOR SALE BY

The H. A. Smith Machinery Co.,

Syracuse, N. Y.

Automatic, No. 53 National Acme 4-spindle.
Automatic No. 55 National Acme 4-spindle.
Automatic screw machines, No. 2 Brown & Sharpe, (3).
Automatic screw machine, No. 0 Brown & Sharpe.
Boring mill, 36" Gisholt.
Chucking lathe, 12x6 Hartness automatic.
Gear shaper, Fellows No. 62.
Grinder, 6x32 Brown & Sharpe plain.
Grinder, 12x48" Modern plain.
Grinder, 10x72 Landis, plain.
Grinder, 16x52 Landis, plain.
Grinder, No. 11 Brown & Sharpe plain.
Miller, Brown & Sharpe No. 13-B plain.
Miller, Brown & Sharpe No. 5 vertical.
Planer, 72"x54"x24' Pond, 4 heads.
Planer, 36"x36"x24' Pond, 4 heads.
Press, inclinable, No. 1 Sidney.
Radial, 4' Hammond sensitive, with tapping attachment.
Radial, 5' Fosdick full universal.
Turret lathes, 21" Gisholt, (3).

FOR SALE BY

The O'Brien Machinery Co.,

113 N. Third St., Philadelphia, Pa.

Boring machine, 36" Bullard, turret head, vertical.
Die sinker, No. 2 Pratt & Whitney.
Drill, 32" Aurora, motor driven, tapping attachment.
Drill press, D-1 Colburn heavy duty.
Drill press, No. 744 Bliss.
Grinders, foundry, Norton heavy duty, (2).
Hammer, 4000 lbs. Chambersburg steam drop.
Hammer, 2500 lbs. Chambersburg steam drop.
Hammer, 1500 lbs. Chambersburg steam drop.
Hammer, 1000 lbs. Chambersburg steam drop.
Hammer, 600 lbs. Chambersburg steam drop.
Hammer, 1500 lbs. Erie sgl. frame st.
Hammer, 1000 lbs. Niles-Bement-Pond, double frame.
Hammer, 1000 lbs. Billings & Spencer board drop.
Hammer, Bement-Miles, 300 lbs.
Lathe, 22"x11" Lehmann, geared head, taper attachment.
Lathe, 24"x12" Schumacher & Boye.
Lathe, 28"x25" Pond.
Lathe, 28"x30" Harrington.
Lathe, 36"x18" American, cone head, taper attachment.
Lathe, 26"x44" with 24' bed McCabe double spindle.
Lathes, extension bed gap, 25"-45"x14" Harrington, motor driven.
Millers, Gould & Eberhardt continuous, (2).

Milling machine, Newton combination circular milling machine and saw for structural work.
Milling mche., No. 2 Cincinnati vert.
Milling mche., No. 4B Becker vert.
Pipe machines, 2", 4", 6", 8" & 12".
Oster, Cox, Williams, Eaton-Cole & Burnham and Jarecki makes, belt or motor driven, comp. stock.
Planer, 36"x36"x12" Woodward & Powell, motor driven, 3 heads.
Planer, 36"x36"x24', Bement, 4 hds.
Press, No. 54 Toledo gr. str. side.
Press, No. 734 Bliss trimming press, with side shear.
Presses, Nos. 18, 19 and 20 Bliss.
Press, Chambersburg motor driven trimming.
Press, No. 3 Cincinnati Bickford.
Punch and shear, No. 3 Hilles & J., dbl. end, motor dr.; punch end, 42" thrt., cap. 1 1/2" thru 1"; shearing end, 35" thrt., cap. 1" plate, 2 1/2" round, 7"x1 1/2" flat, 5"x3" angle.
Punch and shear, Pels combination; punching cap. 1" thick; shearing, 2" rd., 2 1/2" squares, 6x6x1/2" angles.
Radial drill, 5' Pond, motor driven.
Saw, Newton No. 2 cold saw.
Saw, Espen Lucas No. 10 cold saw.
Shaper, 24" American.
Shapers, 12", 14", 16", 21" and 24" stroke, assorted makes.
Shaper, 3 Bement-Miles massive heavy duty, traveling head.
Turret lathe, flat, 3"x36" Jones & L.
Turret lathe, No. 64 Bardons & Oliver, 2 1/2" w. l. cap., cabinet base.

SECOND-HAND MACHINERY

FOR SALE BY

The Cincinnati Bickford Tool Co., - Oakley, Cincinnati, Ohio

Machine Tool Bargains.

LATHES.

14"x 6' Von Wyck.

16"x 8' Bradford.

17"x 6' Greaves Klusman.

17"x 6' 3" Hamilton.

24"x 10' LeBlond.

30"x 16' Lodge & Shipley.

HORIZONTAL BORING MACHINE.

One special construction Bickford.

MISCELLANEOUS.

Gear cutter, 26" No. 3 Brown & S.

Gear generator, 15" Gleason.

Gear cutter, 36" Gould & Eberhardt.

Milling mche., No. 4 Cincinnati pl.

FOR SALE BY

Star Foundry Co., - 214 Front Street, - Albert Lea, Minn.

Owing to changes in manufacture we offer:

Air compressor, 6"x6" dbl. cyl. Curtis, tank, 12 h. p. gas engine, 200' hose with couplings, one No. 80 Cleveland hammer, 1-1/2" air drill, all mounted on steel truck, portable.	Price.....	\$ 500.
Boiler, 40 h. p. vertical, 120 lb. pressure.	Price.....	100.
Bolt and pipe cutter, Wiley & Russell, 1/2" to 1 1/2" bolts, 1/2" to 2" pipe, c.s.	Price.....	200.
Grinder, Schmidt cyl., c. s., blower and hose	Price.....	400.
Hammer, 200 lb. upright power	Price.....	300.
Planer, 48"x48"x14' Niles, 1 head, c. s.	Price.....	500.
Set of Patterns, 6 sizes, fls-ks, jigs, blue prints for Star Power Hammers	Price.....	1,200.

Nearly all above machinery is under belt and can be inspected at our plant.

All are in good working order.

FOR SALE BY

Syracuse Supply Company, 314 W. Fayette St., Syracuse, N. Y.

Guaranteed New Machines in original crates at prices below list:

Crucible, FD-104 Hoskins.
Drills, 21" Canedy-Otto (2).
Drills, 20" Buffalo (4).
Drills, 36" Aurora sliding head (4).
Drills, No. 11 Pratt & Whitney multiple, 16 spindles.
Drills, No. 11 Pratt & Whitney multiple, 8 spindles.
Grinders, No. 60 Heald (2).
Grinders, Diamond wet tool.

Grinder, Churchill internal.
Lathe, 10"x5' Monarch.
Lathe, 14"x8' Monarch.
Lathe, 14"x8' Monarch.
Lathe, 16"x6' Monarch.
Pipe machine, No. 70 Forbes.
Screw mchs., No. 4 W. & S., g. l.h., (3).
Straightener, No. 24 Corey.
Tilted turret, No. 4 Wood.

Exceptional values in Used Tools:

Cylinder borers, 6-spindle Moline adjustable No. 5, 36".
Drill press, 25" W. F. & John Barnes.
Drill press, 4-spindle Harr sensitive.
Drill press, 3-spindle Harr sensitive.
Drill press, 2-spindle Barr sensitive.
Lathe, 14"x 6' American.
Lathe, 14"x 6' Monarch.
Lathe, 16"x 6' Hendey, rebuilt.
Lathe, 16"x 8' American, geared head, rebuilt.
Lathe, 16"x 8' Monarch.
Lathe, 16"x10' American.
Miller, No. 5 Becker vertical.
Miller, No. 2 Brown & S., rebuilt.
Millers, No. 3H LeBlond plain (2).

Millers, No. 4 LeBlond plain (2).
Planer, 30"x30"x16' L. W. Pond.
Planer, 60"x60"x22' Niles.
Press, No. 69N Bliss.
Radial, 5' Pond.
Thread miller, 10" Lees-Bradner.
Tilted turret, No. 6 Wood.
Turret lathes, No. 4 Foster (2).
Turret lathe, No. 2 Warner & S., hollow hex.
Turret lathe, 24"x26" Pratt & Whitney.
Turret lathe, No. 2 s. g. Garvin.
Turret lathes, 3x36" Jones & L. (3).
Turret lathe, 2x24" Jones & Lamson.
Turret lathe, 21" Gisholt.
Turret lathe, No. 3 Cincinnati-Acme.

SECOND-HAND MACHINERY

FOR SALE BY

W. P. Little Co.,

West 9th & Front Sts., Cleveland, Ohio

LATHES.

14"x 8' LeBlond, q. c. g.

16"x 8' Bradford, q. c. g., t. a.

16"x10' Cincinnati, d. b. g., q. c. g.

26"x 9' Bridgeford, d. b. g., (new).

MILLING MACHINES.

No. 13 Garvin plain.

8" Pratt & Whitney automatic.

PUNCH PRESSES.

No. 184 Holden, o. b. l.

S. G. 55 Ferracute double crank.

30" Geared arch press, old type.

No. 144 Williams & White, (2).

GRINDERS, INTERNAL AND EXTERNAL SURFACE.

No. 3 Modern universal.

No. 75 Heald internal, (8).

16" Heald rotary surface.

No. 6 Bryant internal, (2).

14" Pratt & Whitney vertical surface.

MISCELLANEOUS.

Alligator shear, No. 7C New Doty.

Hammer, 250 lb. Morgan steam.

Bolt cutter, 2" Reliance.

Hammer, 50 lb. Bradley, compact.

Boring mill, Lucas horiz. 2 1/2" bar.

Planer, 34"x10' Pratt & Whitney.

Broach, 3-A LaPointe Hudson.

Screw mche., No. 1 Brown & S. auto.

Cold saw, 20" Burke.

Spline miller, 2" Pratt & Whitney.

Partial list. Send us your inquiries. 150 other tools in stock.

FOR SALE BY

The Strong, Carlisle & Hammond Co., Cleveland, O., Detroit, Mich.

ENGINE LATHES.

14"x 6' LeBlond, l. c. g. and chuck.

18"x 8' American, 3-step cone, d. b.

14"x 6' Hamilton.

g., q. c. g.

14"x 8' Monarch, c. r., stand. pattern.

18"x 8' Schumacher-Boye & Emmes,

16"x 6' South Bend, c. r., complete.

c. r., 5-step cone, s. b. g., q. c. g.

16"x 8' Lodge & Shipley, old style,

18"x10' Star, 4-s. c., a. g., with 16"

c. r., q. c. g.

4-jaw ind. chuck.

18"x 8' Prentice c. r., l. c. g., chuck.

TURRET LATHES AND SCREW MACHINES.

No. 2-A W. & S. g. h. tur. lathes.

No. 2 W. & S., p. h., a. c. and b. f.

No. 3-A W. & S. g. h. turret lathe.

No. 4 Warner & S., g. f. h., a. c. and

26" Gisholt heavy duty turret lathe.

b. f.

2"x24" Jones & L. g. h. flat turret.

18" Libby, factory rebuilt.

No. 90 Brown & Sharpe auto., (6).

No. 2-G B. & S. automatics (2).

No. 0 Brown & Sharpe auto. (2).

No. 2 B. & S. turret forming (2).

No. 4 W. & S., p. h., a. c. & b. f.

DRILLING MACHINES.

22" Cincinnati, sliding head, friction

24" Baker heavy duty.

back geared, power feed.

12" Mechanics, friction driven.

24" W. F. & J. Barnes, sliding head,

14" 4-sp. Leland-G., h. s., b. b. (2).

back geared and power feed.

14" 2-spdl. Avey, h. s., b. b., (2).

6" arm Western radial, with tap. att.,

14" 3-spdl. Henry & W., h. s., b. b.

arranged for motor drive.

14" 4-spdl. Henry & W., h. s., b. b.

MILLING MACHINES.

No. 0 Bickett, hand, bench type (3).

No. 2-B B. & S. plain, constant s. dr.

Toledo hand milling machines (2).

No. 1-Y Brown & Sharpe plain.

GRINDERS.

No. 10 B. & S. plain, (2).

Type "DE" Hisey-Wolf internal.

No. 6-A Bryant internal.

No. 11 B. & S. plain grinders.

No. 1 LeBlond cutter grinder.

Plain emery wh'l stand with column

SHAPERS AND PLANERS.

16" Hendey friction, (2).

22"x22"x 5' Putnam planers (2).

METAL CUTTING TOOLS AND SQUARING SHEARS.

Higley cold saw.

3" new Davis cutting-off machine.

GEAR CUTTERS AND HOBBERS.

26" & 36" No. 3 Brown & S. auto.

No. 13 Brown & Sharpe auto.

No. 18 G. & E. vert., for spur & spiral.

No. 12 B. & S., bevel, (2).

No. 3 Barber-Colman.

HAMMER.

Quickwork body hammer.

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Lucas & Son, Inc., - - - **3 Fox St., Bridgeport, Conn.**

DRILLS.

5-26" Snyder, back geared, power feed, sliding head, each.....	\$225.
2-24" Prentice back geared, power feed, sliding head, each.....	175.
1-28" Aurora back geared, power feed, sliding head.....	325.
1-42" Prentice back geared, power feed, sliding head.....	400.
2-8" Henry & Wright class K, high speed, each.....	175.
1-2-spindle 12" Henry & Wright class B.....	475.
3-4-spindle 21" Rockford, bk. grd., power feed, ball bearing spdls., ea..	600.

FOR SALE BY

McMullen Machinery Company, - - - **Grand Rapids, Mich.**

Automatic, 7" Cleveland.	Miller, No. 2-H Becker vertical.
Automatics, No. 00 B. & S.	Pipe mch., 6" Merrill No. 6½.
Band saw, Napier, metal.	Press, Chicago scrap baler.
Cut-off saw, No. 4 N. & B.	Press, No. 3 Manville, d. a.
Drill, 31" Barnes, sliding head.	Presses, No. 6 Manville, pillar, (3).
Grinder, Cleveland, profile.	Presses, No. 6B Manville, pillar, (2).
Grinder, No. 6-A Bryant.	Shear, No. 14 Pettingell, rotary.
Lathe, 9"x21½" Sundstrand, mfg.	Shear, No. 2 W. F. Co. 36" gang.
Lathe, 2½"x26" Greenlee, flat turret.	Welders, No. 10-A Thomson vert. (7)

Ask for Complete List.

FOR SALE BY

Hoosier Universal Machinery Co., - - - **Goshen, Ind.**

Centering machine, Whiton 2-spdl.	Radial drill, 3" Am. Tool Works.
Drills, Minster No. 1D heavy duty.	Saw, metal, 13"x16" Peerless, motor drive.
Flat turret, 3"x39" J. & L., 2-sp., new.	Screw machine, Defiance No. 4, new.
Gear cutter, Cincinnati, spur.	Tooth rounding mche., Schuchardt & Schutte.
Gear hobber, Gould & Eberhardt.	Turret lathes, J. & L. 2 3/16"x36".
Grinder, Landis No. 1 universal.	bar and chucking.
Horizontal boring, drilling and milling machine, Cleveland No. 1.	Turret lathe, P. & W., 1½"x14" swing.
Planer, 24"x24"x14" Chandler No. 10, single head.	Turret lathe, 24"x8" bed.

FOR SALE BY

A. M. Stoehr Machinery Co., - - - **560 W. Adams St., Chicago, Ill.**

Bolt cutters, 3 & 6-spindle Acme.	Oil extractors, centrifugal, (8).
Boring mills, 42" Baush; 54 & 60"	Pipe machines, 6" Jarecki.
Niles; all have 2 heads; and others.	Punch presses, No. 16 Bliss horning;
Compressors, 12 different sizes.	No. 53 Crosby; and others.
Drill presses, single spdl., L. & G.;	Punch & shears, No. 3 L. & A., d. e.,
2-spindle H. & W.; 4-spdl. Foote-	¾" thru ¾"; No. 14 W., d. e., 15"
Burt; 4-spdl. Barnes; 22" Rockford.	throat, No. 66 Badger, hand;
Gear hobbors, cutters; No. 12 Barber-	No. 1-C New Doty, and others.
C., 48" & 60" G. & E.; 36" Fellows	Riveters, 1½-B & No. 5-A High
gear shaper, and others.	Speed; No. 1 Townsend; No. 1
Grinders, No. 3 LaSalle plain and	L. & A., ¾" capacity; and others.
surface; 3x18" Norton, and others.	Saws, 9x9 Sterling high speed; 12"
Header, No. 2 Manville.	band, and eight others
Lathes, 22" to 44" McCabe; 18x8	Screw machines, Nos. 2 & 3 Foster
Barnes, hvy. duty; 19x8 LeBlond,	(12); Nos. 52 & 53 Acme, others
q. c. g.; 16x8 Flather; 15 & 24 spin-	plain and automatic.
ning, and others.	Shears, Pittsburgh alligator, 1½".
Milling mchs., No. 25 Becker plain;	Tapper, R. & S., ¾" capacity.
No. 6 Whitney; No. 0 Rockford pl.;	Welders, both spot and butt.
No. 3 Thurston dieing, & others.	Wire straightening machines, (8).

SECOND-HAND MACHINERY

FOR SALE BY

Brown Machinery Co., 2323 N. 9th St., St. Louis, Mo.

Buffing lathe, Hisey 3 h. p. electric, a. c.	\$ 100.
Buffing lathe, U. S. 3 h. p. electric, a. c.	125.
Drill, 24" Aurora, sliding head, tapping attachment	275.
Drill, Baush No. 3 multiple, cap. 30 spds., rectangular hd. 20x40"	Price 1500.
Drill, radial, horizontal, No. 1 Barnes, d. e.	350.
Gear shaper, 36" Fellows	500.
Grinder, cylinder, No. 60 Heald	850.
Grinder, No. 14 Gardner, b. b., disk, dry, 20" disks, good cond.	Price 400.
Grinder, No. 6 Besly two-spindle disk, 20" disks	Price 350.
Grinder, Bath universal	750.
Grinder, LaSalle automatic surface, good condition	Price 275.
Grinder, No. 1 Brown & Sharpe universal, 10x24; good condition	Price 375.
Grinder, No. 14 Besly single spindle ring wheel	Price 400.
Grinders, emery, St. Louis and Western	
Hammer, size A United, motor driven	450.
Lathes, 16"x8" Monarch, heavy duty, each	375.
Lathe, 20"x8" Reed	300.
Miller, No. 1B Fox, hand & pwr. fd., 18x6x14; new, never used	Price 400.
Planer, 60"x60"x20" Niles, 3 heads	
Polishers and buffers, drop head, New Britain, each	50.
Press, geared, Stiles & Parker, weight about 9000 lbs.	
Shear, Niagara 8', 18 ga., foot power, square, splendid condition	Price 275.
Shear, Marshalltown No. 134 rotary splitting, cap. 1/2" plate; 4' throat; arranged for motor drive. Like new	Price 750.
Many other bargains. Write for List No. 124.	

FOR SALE BY

Fitzsimmons & Cole Machinery Company

1208 House Building, Pittsburgh, Pa.

Air compressor, Ingersoll, 6x6", b. d.	
Bolt cutters, 1 1/2" to 4" Landis	
Boring mill, 62" Bullard, b. d.	
Boring mill, 84" Bickford, m. d., new	
Boring mill, 120" Niles, b. d.	
Die sinker, No. 3 Pratt & Whitney	
Drill, radial, 4" Mueller, m. d.	
Flanger, McCabe, 1/2" capacity	
Gear cutter, No. 13 Brown & Sharpe	
Gear planer, 24" Gleason, bevel	
Grinder, 16"x48" Landis, crankshaft	
Grinder, 16"x52" Landis, plain	
Hammer, 50 lb. Mayer	
Hammer, 200 lb. Bradley	
Hammers, 2-B, 3-B, 4-B & 4-N Nazel	
Lathe, 18"x 8" LeBlond, q. c. g., b. d.	
Lathe, 30"x16" L. & S., t. a., q. c. g.	
Lathe, 52"x34" Pittsburgh, 2 car., m. d.	
Lathe, turret, 5"x30" Bardons & O.	
Miller, No. 4 Cincinnati pl., s. p. d.	
Miller, univ., Oesterlein, 25 1/2"x7 1/2"x10"	
Miller, Ingersoll slab 36"x36"x18"	
Pipe mch., No. 1-B Williams, 1/2 to 2"	
Pipe machine, 12" Jarecki, b. d.	
Planer, 36"x36"x24" Pond, 4 hds, b. d.	
Planer, 48"x48"x14" Gray, 3 hds., b. d.	
Planer, 48"x48"x14" Pond, 4 hds., b. d.	
Planer, 96"x96"x20" Pond, 4 hds., m. d.	
Planer, 120"x90"x27" Detrick & H.	
Planer, o. s., D. & H. 30"x8"	
Planer, o. s., Cleveland, 36"x36"x16"	
Planer, o. s., Cleveland, 48"x48"x20"	
Press, baling hyd. No. 12-PLogemann	
Press, No. 37 1/2 Bliss, s. s., 6" stroke	
Punch & shear, No. "A" L. & A., 2" thru 1 1/2"	
Punch & shear, Cleveland 24" thrt., 1 1/2" thru 1", arch. jaw	
Punch & s., Pels, type RBLUEF-26	
Punch, hor., Cleveland, 1" thru 1"	
Punch, multiple, No. 5 H. & J., 10'	
Riveter, Hanna, 70-ton, 18" reach	
Riveter, Hanna 30-ton, 75" reach	
Rolls, angle bending, 4"x4"x3"	
Rolls, angle bending, 6x6x4" K. & R.	
Rolls, bending, 4' 6" x4' m. d.	
Rolls, bending, 8' x2" N.-B.-P.	
Rolls, bending, 10' x4" Bertsch, m. d.	
Rolls, bend., 16' x4" Cleveland, m. d.	
Sand blast, MacLeod, 36"x36"	
Saw, hack, Peerless 9'x9"	
Shaper, 24" Cincinnati, b. g., m. d.	
Shaper, 24" Stockbridge, b. g., b. d.	
Shaper, 38" Queen City, s. p. d.	
Shear, alligator, Carlin, cap. 1 1/2"	
Shear, alligator, No. 3 Canton, 2" sq.	
Shear, angle, L. & A., cap. 8"x8"x14"	
Shear, bar, No. 17 Badger, comb.	
Shear, guil, No. 3 H. & J., cap. 2 1/2" sq.	
Shear, Toledo, 10' x3/16" cap., m. d.	
Shear, bevel, Ryerson 1/2", m. d.	
Straightening roll, 9-roll, rolls 3x42"	
Straightener, beam, No. 4 H. & J.	
Testing machine, 100,000 lbs. Riehle	
Upsetter, 2 1/2" Ajax, steel bed, b. d.	
Welder, No. 20-A Thompson, butt.	

SECOND-HAND MACHINERY

FOR SALE BY

D. C. Oviatt & Co., - - - **1100 St. Clair Ave., Cleveland, O.**
PRESSES.

Bliss Nos. 1½ & 3½B, toggle.
Bliss No. 2 double crank.
Bliss "Stiles" Nos. 3 & 4.
Bliss 68-C & 68-N double action.
Bliss 73½, 73½, 74½ & 75½.
Consolidated 56, 65, 75, 165.

Toledo No. 114 wiring press.
Toledo No. 666 knuckle joint.
Toledo 34-P, 35-P, 36-P presses.
Toledo 54 & 55½, straight side.
Michigan No. 5 inclinable flywheel.
Niagara No. 4½ inclinable, flywheel.

MISCELLANEOUS.

Automatics, Gridley 1½", 1½", 1½".
Brake, Ohio 10' power, 3/16" cap.
Bulldozers, W. & W. 2, 4, 6, 30.
Drills, Colburn D-1, D-2, D-3.
Gear cutter, No. 3 B. & S. 28".
Gear cutter, No. 3 B. & S. 36".
Grinders, disc, Gardner 6 & 7.
Grinder, Pratt & Whitney 14".
Hammer, No. 2-B Nazelair, arr. m.d.
Rivet hammers, 2-A, 3-A, 4-A & 5-A.
Rolls, Bertsch 10', capacity 1".
Saws, Ryerson friction No. 3.
Screw slotter, No. 2 W-F., cap. 1/2"x3".
Seamers, double, Nos. 2½ & 3 Bliss.

Seamer, double, No. 6 Niagara.
Shears, Bertsch 6', 21" thrt., 3/16".
Shears, Bertsch 8', 21" thrt., 3/16".
Shear, alligator, Canton No. 5.
Shear, alligator, Hiles-Jones No. 2.
Shear, Niagara 416-C slitting.
Shear, Toledo 36"x18 ga. power.
Tapper, Garvin No. 2 automatic.
Tumbling barrels, 18"x30"x48".
Turret lathes, W. & S. 4 and 6.
Turret lathe, Libby 18".
Turret lathes, Acme 3½"x36".
Welder, Winfield, 2 pcs. 11 ga. cap.
Welder, Federal No. 16-A butt.

Over 400 Machine Tools in stock. Send us your inquiries.

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,
1211-1223 N. 12th St., **St. Louis, Mo.**

DRILLS.

30" arm Drees radial.
5' arm Pond.
4' arm Bickford.

3' Canedy-Otto post drill.
24" Aurora sliding head.
38" Bickford sliding head.

LATHES.

15"x 7' Carroll-Jamieson.
15"x 6' Monarch, q. c. g.
20"x10' Rahn & Mayer.
44"x24' Pond, triple geared.

21"x10' Boye & Emmes.
24"x10' Lodge & Shipley.
26"x12' Putnam.
26"x12' Bridgeford.

PLANERS.

24"x24"x 6' Powell.
36"x36"x10' Flather, 2 heads.

42"x42"x16' Powell, 3 heads.
48"x48"x14' Gray, 2 heads.

MILLING MACHINES

No. 14 Rockford plain.
No. 14-A Rockford plain.
No. 12 Brown & Sharpe.
No. 1 Knight vertical.
No. 3 Oesterlein plain.

No. 3 Cincinnati plain.
No. 4 Cincinnati plain.
No. 12 Kempsmith.
No. 33 Kempsmith.

GRINDERS.

Schmidt auto. cylinder, 2½"x10".
5"x18" Ott.
No. 1 Fraser surface grinder.
30"x84" Diamond face grinder.

No. 50 Gardner disc.
No. 16 Brown & Sharpe plain.
8" Heald rotary, magnetic chuck.
Washburn twist drill grinder.

MISCELLANEOUS.

Air compressors, (8).
Acetylene generator, 100 cu. ft. cap.
Belt lacer, large, Peerless.
Bolt cutter, 1" Landis.
Bolt cutter, 2" Standard.
Boring mche., hor., No. 2 P. & H.
Bulldozer, 75-ton Lourie hydraulic.
Gear hobber, No. 1 Schuchart & S.
Hammer, 90 lb. Justice.
Hammer, No. 2-A high speed.
Pipe machine, 16" Bignall & Keeler.

Post hammer, Pettingell.
Punch, No. 5 Long & A., 5" throat.
Punch, No. 7 Long & A., 4" throat.
Riveter, model A, Shuster.
Screw machine, 3"x36" Jones & L.
Screw machine, 2"x24" Jones & L.
Screw mche., 1½" Smurr & Kamen.
Swaging machine, Excelsior.
Tapping mche., auto., No. 1 Garvin.
Tilted turret lathes, Nos. 2, 3 & 4 Wood.

An Invitation

We are going to hold a testing-out party and you are cordially invited to attend.

A 30" swing x 40' bed Lodge & Shipley Lathe is being reconditioned at our Jersey City shops. If you are interested in purchasing a lathe of this design—quick change—double back geared—hollow spindle—single pulley—arranged for motor drive thru variable speed countershaft—you will be interested in seeing this lathe at a test to be given for public view.

Just drop us a line and we will tell you the date.

80" Swing x 46' Bed, Putnam Lathe. All Steel Geared Motor Drive.

McCabe Flanging Machine.

24" Back-geared Cincinnati Shaper.

Inspect them and get the "before moving price."

J. J. McCabe's "2-in-1" Double Spindle Lathes

We have a few rebuilt "2-in-1" lathes. One of them, a 32"/54" Swing Lathe with a 14' Bed is exceptionally good. It has passed the tests of a new lathe and carries our same guarantee. The equivalent of two lathes for the price of one.

Other "2-in-1" Lathes in Stock

26/48" Swing x 12' Bed.

26/48" Swing x 22' Bed.

26/48" Swing x 28' Bed.

38/60" Swing x 30' Bed.

Some of our "Former Pattern"
Lathes 24/40" and 26/44" Swing.
Very low price.

Planers

72"x72"x24' Niles, 4 Hds., Belt Dr.

48"x48"x30' Putnam, 4 Heads.

48"x48"x14' Pond, 2 Heads.

48"x48"x15' Sellers, 3 Heads.

26"x26"x 6' Niles, 1 Head.

Boring Mills

8' Niles, 2 Heads.

50" Bullard, 2 Heads.

48" Gisholt, 2 Heads.

4 3/4" Bar Niles Horizontal.

4 7/8" Bar Bement Miles Horizontal.

2 7/8" Bar Bement Miles.

J. J. McCabe Lathe & Machinery Corp'n
SINGER BUILDING - - NEW YORK CITY

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- 5—No. 1 CINCINNATI Back Geared
Plain MILLING MACHINES..... \$275.00 each.
- 3—3', AMERICAN Sensitive Radial
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- 2 36" BROWN & SHARPE Gear
Cutters..... \$950.00 each.
- 2 12"x36" CINCINNATI Plain
Grinders..... \$875.00 each.
- 2—No. 75 HEALD Internal Grinders \$425.00 each.
- 4 Spindle NATIONAL ACME Screw Machines
- 7—No. 52— $\frac{3}{8}$ " Capacity..... \$425.00 each.
- 3—No. 56—2 $\frac{1}{4}$ " Capacity..... \$650.00 each.

CINCINNATI AUTOMATIC MACHINE CO., Cincinnati, Ohio

SPECIAL

1750 foot Laidlaw-Dunn & Gordon
Two-Stage Belt Driven

Air Compressor

high pressure cylinder 25 in., low
pressure cylinder 15 in., stroke 18 in.

PRICE \$1475

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Connected with this is a model machine shop devoted exclusively to rebuilding these machines.

Let us send you one of our circulars describing our methods, listing our stock and picturing our plant.

Upon receipt of your address we will forward these circulars periodically.

Real Values—Real Rebuilt Tools

SHAPERS AND PLANERS

28" Ohio heavy duty bk. grd. crank.
26" Stockbridge heavy duty, b. g. c.
20" Columbia hvy. duty bk. grd. crk.
16" Walcott elliptical geared crank.

14" Steptoe plain crank.
36"x36"x14" American, two heads.
30"x30"x 8" Hamilton, one head.
30"x30"x8" Gray, belt drive, 1 head.

MILLING MACHINES

No. 4 LeBlond univ., cone pulley.
No. 3 Standard Cincinnati univ., sgl. pul.
No. 3 LeBlond univ., cone pulley.
No. 2 Hi-Power Cincinnati univ., sgl. pul.
No. 2 LeBlond univ., cone pulley.
No. 3-B heavy B. & S. plain, sgl. pul.
No. 3 Hi-Power Cincinnati pl., sgl. pul.
No. 3 Kempsmith plain, cone pul.
No. 3 LeBlond plain, cone pulley.

No. 3 Cincinnati plain, cone pulley.
No. 2-B heavy B. & S. pl., sgl. pul.
No. 2 Cincinnati plain, cone pulley.
No. 2 LeBlond plain cone pulley.
No. 0 Cincinnati plain, cone pulley.
No. 6 Whitney hand miller.
Becker large hand miller.
No. 22 Garvin vertical, cone pulley.
No. 5 Becker vertical, cone pulley.

RADIAL AND UPRIGHT DRILLS

8" N.-B.-P. semi-universal, radial.
3 1/2" American triple purpose radial, speed box.
3" Bickford plain, speed box.
3" Amer. T. Wks. pl. radial, cone dr.
3" Carlton hi-speed sens. radial.
25" Aurora upright, tapping attach.
26" W. F. & J. Barnes upright, tap. att.
26" Cincinnati-Bickford upright tap. att.
24" Milwaukee upright.

24" Rockford upright.
23" Rockford upright tapping attach.
22" W. F. & John Barnes upright.
20" Superior upright.
4-spindle Allen hi-speed sensitive.
3-spindle Leland-G. hi-speed sens.
2-spindle H. & W. hi-speed sens.
2-spindle Superior hi-speed sens.
3-spindle 26" Barnes gang.

LATHES

36"x22" Putnam, s. q. triple geared.
36"x18" Putnam, s. q. triple geared.
30"x12" LeBlond heavy duty, qk. ch.
30"x16" H., S. & G. heavy duty, q. c.
24"x14" Schumacher-B. stand'd c. g.
24"x10" Boye & Emmes, q. c. g.
22"x12" Rahn & Larmon, qk. chge.
20"x10" Bradford, quick change gear.

20"x 8" Cisco heavy duty, qk. chge.
18"x 8" Lodge & Shipley, qk. chge.
16"x 8" Hamilton, quick change.
16"x 6" Pratt & Whitney, qk. chge.
14"x 6" Monarch, quick change.
14"x 8" Hamilton tool room, qk. ch., taper, relieving and collet attach.

TURRET LATHES & SCREW MACHINES

3 1/2"x36" Acme flat turret, grd. head.
24"x26" P. & W. flat turret, grd. hd.
24" Gisholt turret, late type, 6 1/2" hole in spindle.
2" Pratt & Whitney turret, all feeds.

No. 6 Warner & Swasey turret.
14" Pratt & Whitney turret.
No. 4 Bardons & Oliver turret.
No. 1 B. & S. wire fd. screw mch.
No. 1 S. P. Garvin screw mch., new.

GRINDERS

No. 55 Heald cylinder, complete.
No. 60 Heald cylinder, complete.
No. 70 Heald cylinder, complete.
No. 2 B. & S. surface, mag. chuck.

6"x15" Fitchburg plain.
Nos. 1 & 2 B. & S. univ. cylindrical.
6"x32" Norton, plain cylindrical.
No. 1 LeBlond univ. tool & cutter.

GEAR CUTTERS AND HOBBERS

No. 4—36" Brown & Sharpe auto.
No. 3—24" Brown & Sharpe auto.
24" Gould & Eberhardt automatic.

No. 12 Brown & Sharpe auto. spur and bevel, cap. up to 12".
18" Gould & Eberhardt gear hobber.

MISCELLANEOUS

Arbor presses. Greenard Nos. 4 & 5.
Bolt cutter, 2" National, complete with dies.
Bolt cutter, 1 1/2" Acme.
Bolt threader, 1" Landis.
Cold saw, No. 1 Cochrane & Bly, belt drive.
Keyseaters, Nos. 1 & 2 Davis.

Die slotter, Garvin, belt drive, with rotary table.
Keyseater, No. 3 Baker.
Press, power, No. 4 Ferracute.
Punch & shear, sgl. end, Long & A.
Riveting ham's, Nos. 3A & 4A H. S.
Rivet spinner, 5/16" Grant.
Tapping mch., No. 2 Garvin, belt dr.

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Approximately \$5,000,000 worth of machines sold. \$100,000 can be salvaged from machines in process of manufacture. Annual service business about \$15,000.

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BORING MILLS:	30" Warner & Swasey Vert., table 29" dia.....	\$200.
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GRINDERS:	Webster & Perks D. E. Heavy Foundry Type, takes wheels 24"x4".....	\$ 50.
LATHES:	15"x8" Schellenbach, h. s.	\$275.
	19"x10" LeBlond, b. g., hollow spindle, motor drive, as is.....	150.
	21"x12" Johnson, hollow spindle, taper attach....	275.
	24"x14" Rahn-Mayer Corp.....	650.
	24"x16" 6" Johnson, solid spindle.....	375.
	26"x10" 6" Walcott Hvy. Duty Q.C.G., 7, ea.	650.
	27"x12" Pittsburgh.....	700.
	24"x6" Gisholt Turret, 6¼" hol. spdl., 2, ea.	950.
	3"x36" Jones & Lamson Flat Turret, as is.....	200.
	3"x36" Jones & Lamson Flat Turret.....	950.
	2¼"x24" Jones & Lamson Flat Turret.....	850.
MILLING MCHE.:	No. 3 Cincinnati Plain, table 12"x3'11", as is....	\$250.
PRESSES:	Double Cam Action, 4" stroke.....	\$150.
	Double Acting Drawing, 3¼" stroke.....	175.
	No. 56 Knuckle Joint Embossing Press, 60 tons ..	150.
SHEARS:	Waterbury-Farrell Rotary Shear, about 16 ga...	\$ 45.
HAMMERS:	25 lb. Bradley Cushioned Helve.....	\$140.
	40 lb. Bradley Cushioned Helve.....	175.
	800 lb. Bement Single Frame Steam Forging....	475.
	2000 lb. Bement-Miles Sgl. Frame. Stm Forg g.	1300.
	2000 lb. Bement-Miles Steam Drop.....	475.
SHAPERS:	14" Gould & Eberhardt Single Geared Crank....	\$160.
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MISCELLANEOUS:	Air Compressor Chicago, 690 cu. ft., 100 lb. pressure.....	\$750.
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	Blower, No. 8 Buffalo, Volume.....	60.
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	Pipe Machine, Eaton-Cole-Burnham 1" to 4".....	225.
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	Salamander for Coke heating, inside dimensions 22"x22"x24", 38" high. Good as new....	15.
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	Swaging Machine, Excelsior, cap 3/16".....	75.
	Vises, 6" Jaw Machinists Bench, plain jaw and plain base, some swivel base, each.....	\$7.50.

RUSSELL MACHINE CO., 1447 Oliver Building Pittsburgh, Pa.

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Pond Works Equipment

An exceptional opportunity for factories having 220 v. Direct Current

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11"x 5' Blount Speed Lathes.
13"x 6' Blount Speed Lathes.
18"x 6' LeBlond Q. C.
18"x 8' LeBlond Q. C.
21"x 8' LeBlond Heavy Duty.
25"x10' LeBlond Heavy Duty.
26"x16' Pond Q. C.
30"x14' Pond Q. C.
30"x67' 6" Pond Q. C.
36"x12' Pond Q. C.
36"x12' Pond, Heavy, Taper.
36"x16' Pond Q. C.
42"x17' Pond Q. C.

TURRET LATHES

2"x26" P. & W. Bar Feed.
3"x36" P. & W. Bar Feed.
18" Libby. 3-jaw chuck.
21"x8' LeBlond Univ. Turret.
21" Pond Rigid Turret.
25" Pond Rigid Turret.

POND PLANERS

(All Reversing Motor Drive)

30"x30"x 6'-2 heads.
30"x30"x 8'-2 or 3 heads.
30"x30"x12'-2 or 4 heads.
36"x36"x 8'-3 heads.
36"x36"x10', 12', 14', 16', 18', 24',
and 26'-4 heads.
42"x42"x18', 26', and 30'-4 heads.
48"x48"x16'-4 heads.
48"x48"x30'-4 heads.
50"x36"x10' and 22'-2 heads.
54"x54"x22'-4 heads.
96"x72"x42'-4 heads.
120"x120"x46'-4 heads.

SHAPERS AND SLOTTERS

28" Acme Shaper.
15" Bement Slotter.
18" Putnam Slotter, Old Style.
22" Bement Slotter.

DRILLS

Allen High Speed, Single Spindle.
6' Niles Semi-Universal Radial.
6' Pond Plain Radial.
8' Pond Plain Radial.

BORING MACHINES

10' Niles B. & T. Mill.
60" Bement Duplex Control Borer.
66"-44" Bar Bement Hor. B. & D.
Machine.
80"-54" Bar Bement Hor. B. & D.
Machine.
Pond Horizontal Floor Drills.

GRINDERS

No. 15-12" Ransom Dry Grinders.
18" Ransom Disc Grinders.
36" Bridgeport Wet Grinder.
48" Pond Portable Grindstones.
6x32 Norton Plain.
20"x144" Norton Plain.
No. 4, 12x60 B. & S. Universal.
No. 70 Heald Internal.
No. 24, 53" Gardner Disc.
14" Mummert-Dixon Portable.

GEAR AND RACK CUTTERS

No. 5-A Lees Bradner Gr. Generat'r.
15" Gleason Bevel Generator.
24" Gleason Bevel Gear Planer.
90" P. & W. Old Style Hobber.
72" G. E. Rack Cutter.

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25-ton, 115' Span Yard Crane, 610'
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25-ton, 41' Span, 5-ton Aux. Hoist.
10-ton, 41' Span, 3-motors.
5-ton, 22' Span, 3-motors.
5-ton, 19' 9" Span, 3-motors.
5-ton, 17' 6" Span, 3-motors.
3-ton, 22' 6" Span, 3-motors.

MILLING MACHINES

No. 2-B Heavy Plain B. & S.
No. 3-B Heavy Plain B. & S.
No. C. Becker Vertical.
P. & W. Vertical 60"x14" Table.
48x48x10 Bement Planer Type.
48x48x12 Bement Multi Spindle.
44x12" P. & W. Thread.
6x48 P. & W. Thread.
6x80 P. & W. Thread.
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Used Machine Tools

- 1—Cleveland Horizontal Boring Machine, 24" diameter bar, speed box drive with friction clutch pulley.....\$ 750.
- 1—18"x9' Chard Quick Change Lathe, 3-step cone, double sliding back gears, double friction countershaft, turret tool post and steady rest.....\$ 400.
- 1—17"x6' LeBlond Lathe with 3-step cone, double friction back gears, quick change, without lead screw, with connected compound and plain rest, single friction countershaft.....\$ 400.
- 1—30" Gisholt Screw Cutting Boring Mill, with change gears, 4-step cone, back gear, double friction countershaft.....\$ 550.
- 1—No. 25 Foote-Burt Heavy Duty Drilling Machine...\$ 500.
- 1—No. 3 Baker Bros. Keyseating and Slotting Machine, capacity to cut keyways 24" in length by 3" in width, or with chamber hub and extended cutter bars will keyseat 36" long; any work up to 72" in diameter can be chucked with the column in the outside position; largest diameter of cutter bar used 2-7/16".....\$ 700.
- 1—No. 1 Barrett Horizontal Boring Machine, 3 1/2" bar, with two Star facing heads and countershaft.....\$ 825.

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SLIGHTLY USED EQUIPMENT

With as good as new money back guarantee

PARTIAL LIST

Drill Presses

- 20" 4-Spindle Rockford.
- No. 17 4-Spindle Foote-Burt.
- No. 310 Baker.
- 3' Cinti-Bickford Radial.
- 4' American Sensitive Radial.

Grinders

- 6 x32 Norton Plain.
- 10x36 Norton Plain.
- 10x50 Norton Plain.
- No. 10 Brown & Sharpe Plain.

Millers

- No. 2 Hendey Plain.
- No. 3 Cincinnati Plain.
- 28" Cincinnati Duplex.
- 13-B Brown & Sharpe Production
- 2-Y Brown & Sharpe Plain.

Automatics

- 7/8" - 1 1/4" Cleveland Model A.
- 2 3/4" - 3 1/4" Cleveland Model A.

Turret Lathes

- 1 1/2" Acme B. G., Friction Head.
- 24" Gisholt.
- 24" Bullard Vertical.
- No. 6 Warner & Swasey.
- No. 4 Millholland Universal.

Miscellaneous

- No. 12 Barber-Colman Hobbers.
- F-24 Badger Single End Punch.
- No. 3 LaPointe Double Broach.
- Taft-Peirce Thread Miller.
- 36" Gisholt Boring Mill.

Send us your inquiries

Mid-West Machine Tool & Supply Co.
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ReMANUFACTURED (ORIGINATED BY US)- MACHINE TOOLS

REG. U. S. PAT. OFF.

Largest stock of high grade machine tools in America. All principal makes and models. Every one guaranteed. Save 25 to 60 per cent on prices.

This is only a partial list. Write for price on any tool you need, whether listed below or not.

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LATHES

- 14-20"x 8' LeBlond.
- 5-20"x12' American.
- 5-20"x16' American.
- 20-21"x10' LeBlond.
- 10-24"x11' Cisco.
- 1-24"x12' Reed Prentice Grd. Hd.
- 3-24"x12' Providence.
- 1-24"x15' Chard.
- 7-25"x10' LeBlond.
- 10-25"x12' LeBlond.
- 24-26"x10' Canada.
- 10-26"x18' Bridgeford.
- 2-30"-34"x20' American.
- 18-32"x12' Pittsburgh.
- 1-36"x36' Putnam geared head.
- 4-36"x30' Pittsburgh Geared Hd.
- 3-36"x37' Niles Bement Pond.
- 1-51"x20' LeBlond.
- 1-56"-64"x18' Johnston.

MILLERS

- 5-No. 2 Kempsmith.
- 1-No. 3 Kempsmith Universal.
- 2-No. 2 Rockford.
- 1-No. 2B Rockford Universal.
- 2-No. 28 Ohio.
- 6-No. 2-B Hvy. Brown & Sharpe.
- 4-No. 3 Kempsmith.
- 9-No. 3-B Hvy. Brown & Sharpe.
- 2-No. 4 Cincinnati.
- 2-No. 4 LeBlond.
- 3-No. 4-B Becker.
- 2-No. 3 Cincinnati Vertical.
- 2-No. 4 Cincinnati Vertical.
- 4-No. 5-C Becker.
- 3-No. 6 Becker.

PLANERS

- 1-24"x24"x 6 American.
- 2-36"x36"x10' Bickett.
- 1-36"x36"x12' Woodward & P.
- 3-36"x36"x18' Cincinnati.
- 3-42"x42"x18' Rockford.
- 1-72"x56"x36' Cincinnati.

PRESSES

- 1-No. 34 Toledo Solid Back.
- 1-No. 69 Stoll Geared.

BORING MILLS—Vertical

- 2-24" Bullard "New Era."
- 1-42" Gisholt.
- 1-52" Gisholt.
- 1-60" Pittsburgh.
- 1-62" King.
- 2-72" Cincinnati.
- 7-72" Gisholt.
- 1-84" King.

BORING MILLS—Horizontal

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Slotter, geared, 25" Niles.
Turret lathe, No. 4 W. & S.,
geared friction head.
Turret lathe, 18" Libby, sgl. pul.
dr., arrgd. for belted motor dr.

THE E. L. ESSLEY · MACHINERY · CO

551 W. Washington Blvd., Chicago.

78-80 W. Water St., Milwaukee

MACHINE TOOLS NEW AND USED

Prices Warrant Your Attention

14"x 6" American Lathes, q. c. g.
18"x 8" LeBlond Lathes.
18"x10" LeBlond Lathes, q. c. g.,
taper attachment.
34"x60" Lo-Swing Lathe, 2 carr.
2"x24" J. & L. 2-Sp. Tur. Lathes.
4" Gridley 4-Sp. Automatics.
3' American sensitive Radial
Drill, taper attachment.
3' Pilton Bench Drills.
No. 1 Pratt & Whitney 2-spindle
Deep Hole Drill.
5"x18" Ott Cyl. Grinder (NEW).
No. 120 Gardner Disc Grinder.
No. 10-18" Besly Disc Grinder.
No. C2 Becker Vertical Miller.
No. 1 B. & S. Universal (old
style) Miller.
No. 2 P. & W. Pl. Head Miller.
4" P. & W. Spline Miller.
No. 25 Becker Plain Millers.
Miscellaneous tools, such as cutters, drills, reamers, magic chucks,
emery wheels up to 26" dia., 3" face.

No. 1 Standard Hand Millers.
Wisconsin Hand Millers.
12" B. & S. Univ. Index Centers.
14" Cin. Univ. Index Centers.
10" Becker 3-sp. Index Centers.
14" Becker Plain Index Centers.
No. 4 I Nazel Hammer, m. d.,
10 h. p. motor.
No. 6 Fellows Gear Shapers.
12" Ingle Tooth Rounder.
8" H. & G. Threading Machine,
with die head.
No. 2 Rockford b. b. Bal. Tools.
8" Reid Univ. Angle Fixtures.

MOTORS

1-1 h. p. 220 v., d. c., 1200 r. p. m.
1-2 h. p. 100/220-volt, 60-cy.,
1-phase, 1750 r. p. m.
5-10 h. p. 230 v., d. c., 650 r. p. m.
4-15 h. p. 230 v., d. c., 350 r. p. m.
5-20 h. p. 230 v., d. c., 850 r. p. m.

BARBOUR, LOVE & WOODWARD, Inc.
Grand Central Terminal Bldg., NEW YORK CITY

Opportunity Knocks Again For the Conservative Buyer

Real Values in Machine Tools—

Lathes

- 1—48"x21' Pond (Plainfield) with motor.
- 1—44"x45' S W Putnam (Fitchburg) with motor.
- 3—32"x12' Pittsburgh.
- 1—30"x28' Pond (Plainfield) with motor.
- 1—24"x12' Reed Prentice, geared head, m. d.
- 1—20"x 8' Reed.
- 1—18"x 8' Reed.
- 1—18"x10' Schumacher & B., t. a.
- 2—18"x 8' Rockford semi q. c.
- 1—3½"x84" Lo-Swing, 2 carriages.

Milling Machines

- 1—No. 2 Brown & Sharpe univ.
- 3—No. 2 Brown & Sharpe plain.
- 1—No. 2 Brown & Sharpe vertical.
- 1—No. 3 Brown & Sharpe plain.
- 1—Becker No. 5-B vertical.
- 1—Model AB Becker vertical.
- 2—No. 13-B Brown & Sharpe.
- 1—No. 2 Cincinnati, single pulley, plain.
- 1—U. S. hand miller.
- 1—Blomquist & Eck hand miller.

Grinders

- 1—No. 2 Brown & Sharpe cutter.
- 1—No. 2 Brown & Sharpe surface, with mag. chuck.
- 1—No. 2 Brown & Sharpe univ.
- 1—Worcester internal.
- 1—21x96 Norton plain.
- 2—10x50 Norton plain.
- 2—Landis crankshaft.
- 1—No. 6 Gardner disc.

Boring Mills—Vertical

- 1—10' to 16' Niles (Hamilton) with motor.
- 1—96" Niles.

Boring Mills—Horizontal

- 2—No. 2 Rockford horizontal.
- 1—Blomquist & Eck horizontal.
- 1—Blomquist & Eck (original) horizontal.

Planers

- 1—72"x72"x24' Detrick & Harvey, motor drive.
- 1—48"x48"x12' Putnam, 3 heads, with motor.
- 1—36"x48"x18' G. A. Gray, 2 hds. on cross rail, 2 side heads, 14 h. p. motor.
- 1—30"x30"x14' G. A. Gray, 2 hds. on cross rail, 10 h. p. motor.
- 1—24"x24"x6' G. A. Gray planer.

Presses

- 1—S. 304 Ferracute.
- 1—150-ton high speed steam.
- 1—No. 108½ Cleveland punch press.
- 1—78½ Bliss str. sided, 52000 lbs.
- 1—No. 26 Toledo cam press.
- 1—No. 78½ Toledo.
- 1—No. 68 Stoll, straight side.

Drill Presses and Radial Drills

- 2—D 2 Colburn.
- 1—26" Barnes.
- 1—34" Barnes.
- 1—3½' Fossick & Holloway radial
- 1—6 spindle Allen sensitive.
- 1—36" Aurora.
- 1—12 spindle Harrington.
- 1—6 spindle Foote-Burt.
- 1—Moline Hole Hog.
- 1—6' Niles radial.
- 1—2½' Mueller radial.

Turret & Screw Machines

- 2—3¼" Gridley sgle. spdl. autos.
- 2—Model B, 2" Cleveland autos.
- 3—Model B, 2" Cleveland auto-matics, New.
- 2—Model B, 1¼" Cleveland auto.
- 2—24" Gisholt turret lathes.
- 1—No. 6 Foster screw.
- 2—No. 4 Foster screw.
- 5—No. 4 Drees turret lathes.
- 1—18" Gisholt turret lathe.
- 1—21" Libby turret lathe.
- 1—No. 6 Warner & Swasey turret
- 1—No. 2 Brown & Sharpe screw.
- 1—No. 1 Brown & Sharpe screw.
- 1—No. 4 Woods tilted turret.

The EMPIRE MACHINERY EXCHANGE CO., Inc.
Offices and Warehouses: 2261 E. 14th St., Cleveland, Ohio

REAL BARGAINS

No. 4 LeBlond Hvy. Duty Plain Miller, with c. s.	\$1000.
No. 2½ LeBlond Heavy Duty Plain Miller, c. s.	750.
No. 1 Oesterlein Plain Miller, with c. s.	275.
16"x8' Ohio Lathe, Q. C. complete with all equip.	350.
11"x6' South Bend Lathe complete, like new	150.
2-¾" Starck Precision Lathes, each	150.
Serpentine Shear, 5' Throat	150.
Fay & Egan Variety Saw, complete, like new,	
40x44 table	200.
36" Greaves & Klusman Band Saw	145.
20" Back Geared, Pwr. Fd. Champion Drill Press	85.
14" Gardner Motor driven Disc Grinder, 220-volt	
60 Cycle 3-Phase	200.
Oil Separator, 1 bushel capacity, complete	65.

Rebuilt, Guaranteed Leather Belting

6¢ Per Inch Per Foot. Double Belt, Double Price.

ELECTRIC MOTORS, A. C. & D. C.

Exhaust Fans—Blowers—Electric Drills

All Our Motors Are Guaranteed

Midland Equipment Co., 612 W. Van Buren St.,
CHICAGO, ILL.

NEW MACHINERY

- 1—No. 4 Bausch Multiple Spindle Drill, 30x46" head,
twenty-two 2" spindles.
- 1—No. 536 Newton Horizontal Milling Machine,
table 20"x8'.
- 1—No. 25 Williams & White Bulldozer.

USED MACHINERY

- 1—Bement Niles Planer Type Slab Milling Machine,
table 24"x8'.
- 1—No. 536 Newton Horizontal Milling Machine,
table 20"x8'.
- 1—Midwest Centrifugal Pump, 500 gallons per
minute, 210' head.
- 2—50 H. P. General Electric Vertical Motors for
above pump, 1750 R. P. M., 60 cycles, 3 Phase,
440 volt.
- 12—Diamond Plow Share Grinding Wheel Stands.

Oliver Chilled Plow Works

535 Chapin St.,

South Bend, Ind.

New & Guaranteed Rebuilt Machine Tools

At Prices to Net You a Worth While Saving

BORING MILLS

- 1—Landis No. 35 horizontal.
- 1—Gisholt 42" vertical, 2 heads.
- 1—Colburn 48", 2 heads.

DRILLS—Upright and Radial

- 5—Sipp single spindle.
- 12—New 24" Sibley, upright.
- 2—Baker No. 310.
- 20—Rockford Aurora and Barnes, 20", 24" & 28" capacity.
- 2—New Turner No. 3, vert. tur.
- 1—Baush 6" Radial.
- 1—N.-B.-P. 96" Ridgeway, motor drive, plain Radial.

DRILLS—Multiple Spindle

- 1—Natco No. 30, 12 spindle.
- 2—New Baush No. 3, 21 spdl.
- 1—New Baush No. 4, 56 spdl.
- 1—Fox, 6 spindle.
- 1—Moline, 4-spindle.
- 1—Avey No. 2, 4-spdl., pwr. fd.
- 1—Foote-Burt No. 17, 6-spdl.

SCREW MACHINES—Automatic

- 14—Gridley 4-spindle, $\frac{7}{16}$ ", $\frac{3}{4}$ ", $1\frac{1}{4}$ ", $1\frac{3}{4}$ ", 25".
- 2—Gridley $4\frac{1}{4}$ ", $3\frac{3}{4}$ " single spdl.
- 3—Gridley $2\frac{1}{4}$ ", 4-spindle.
- 8—Cleveland $\frac{3}{8}$ ", $1\frac{1}{4}$ ", $2\frac{1}{4}$ ", A.
- 16—B. & S. Nos. 0, 2 & 6 full auto.
- 1—Cleveland $7\frac{3}{8}$ " A.
- 1—New Britain 1x5 bar mch.
- 10—New Britain Nos. 23, 24, 33, and 34.

MILLING MACHINES

- 1—No. 1 B. & S. No. 3 Univ.
- 1—Cincinnati No. 2 Universal.
- 2—Rockford No. $1\frac{1}{2}$; No. 2 Pl.
- 1—LeBlond No. $2\frac{1}{2}$ Plain.
- 2—Brown & S. Nos. 2 & 4 Plain.
- 4—Cincinnati No. 4, a. p. d.
- 1—B. & S. No. 13-B Plain.
- 1—Cincinnati No. 3 vertical.
- 3—Becker Nos. 2H, 4B, Vertical.
- 6—Becker Nos. AB & 5C, Vert.
- 1—Milwaukee No. $1\frac{1}{2}$ -B vert.
- 1—Cincinnati 48" Duplex.
- 2—New Garvin No. 2 Duplex.
- 1—Newton Duplex.
- 1—Van Norman No. $\frac{1}{2}$ Duplex.
- 2—P. & W. $4\frac{1}{2}$ x12 Thread.
- 1—Lees-Bradner No. 8 Thread.

- 8—P. & W. 6x14, 6x48, 6x80 Thread.

- 30—P. & W. No. 4, Spline.

GEAR CUTTERS

- 15—Barber-Colman Nos. 3 & 12.
- 4—Hercules 8".
- 7—Brown & S. 3x36; 3x26; 4x36.
- 1—Cincinnati No. 4-A, 4x48.
- 3—G. & E. No. 18-H.
- 1—G. & E. 60" spur.
- 20—Fellows Nos. 61, 6 & 615.
- 20—Gleason bevel, 6", 11" & 18".
- 1—Lees-Bradner No. 5A gear generator.
- 1—Ingle 12" tooth rounder.

PLANERS

- 7—Putnam 26x26x8', 2 heads.
- 1—W. & P. 24x24x10'.
- 1—New Cleveland 36x36x8'.
- 2—Gray 38x38x20, 3 hds., mtr. dr.
- 1—Putnam 48x48x12', 2 heads.

GRINDERS

- 1—Brown & Sharpe No. 4 Univ.
- 1—Brown & Sharpe No. 14 Plain.
- 1—Springfield 12x12x48 Vert.
- 4—Cincinnati No. 2, 12x36.
- 7—Norton 6x32, 10x36 & 16x36.
- 1—Fitchburg 12x54.
- 12—Bryant Nos. 20 & 6 chucking.
- 2—Bryant No. 15 double spindle.
- 28—Heald Nos. 65, 60 and 70.
- 3—Heald Nos. 255 & 260.
- 1—Van Norman No. 34.

TURRET and SCREW MCHS.

- 50—New Pratt & Whitney $\frac{7}{16}$ ", $\frac{1}{2}$ ", 1" wire feed.
- 10—W. & S. No. 1 Wire Feed.
- 1—Warner & Swasey No. 3-A.
- 4—Foster No. 1-B Universal.
- 1—New Foster No. 10 Turret.
- 4—Greenlee $2\frac{1}{4}$ "x26" Turret.
- 1—J. & L. 2-spindle Turret.
- 1—Libby 26".
- 5—Foster No. 4 Screw.
- 1—W. & S. No. 4 Universal.
- 40—B. & S. Nos. 0, 1, 2, 6, w. f.
- 1—Acme Fox Monitor.
- 1—W. & S. No. 6 b. g., p. f.
- 2—P. & W. 1x14" screw.
- 6—Potter & Johnston No. 6A.
- 6—Potter & Johnston No. 5-A.

Also 500 other tools, such as Shapers, Presses, Bolt Cutters, Broaching Machines, Hot and Cold Saws, Punches and Shears, etc.

MOREY AND CO. INC. 408 Broome St., NEW YORK, N. Y.

Surplus Machinery For Sale

No. 8 Duplex Becker Milling Machine.
No. 1 Knight Milling and Drilling Machine.
20" Double Spindle Rockford Drilling Machine.
1-22" Libby Turret Lathe.
1-No. 3 Broaching Machine.
1-1/4" Capacity Grant Riveter.
1-16" Hendey Shaper.
1-8-Spindle Bosch Drilling Machine.
1-No. 4 Foster Turret Lathe.
1-21" Swing Greenlee Turret Lathe.
2-30" Vertical Boring Mills.
1-10"x72" Norton Grinder.

Prices and description furnished on request. We offer the above machinery together with a number of manufacturing specialties with established markets. Will close this out at bargains on account of changing our line of manufacture.

The Will-Burt Company
ORRVILLE, OHIO

Good Used Tools

Sensitive Drills—Single & Multiple Spindle.
Upright Drills—20", 24" and 26".
Radial Drills—2', 5' and 6',
Cylinder Grinders—Norton, B. & S., Morse.
Surface Grinders—B. & S.
Lathes—14" to 32".
Millers—Vertical and Horizontal.
Planers—30" and 36".
Presses—Inclinable and Straight Side.
Shapers—16" Steptoe and Queen City.
Screw Machines and Turret Lathes.

Stocker-Rumely-Wachs Co.
117 N. Jefferson St., Chicago, Ill.

NEW 3 PHASE MOTORS CHEAP. 3 H. P. \$57.50; 5 H. P. \$67.50

LATHES

12"x 5' Cleveland, geared head.
14"x 6' Carroll-Jameson, new.
14"x 6' Hamilton, grd. hd., motor dr.
14"x 6' Monarch, quick change.
14"x 6' Von Wyck, quick change gear, taper attachment.
14"x 8' Sidney, double back geared.
16"x 6' Hamilton, style II.

16"x 8' Sidney, double back geared.
18"x 10' American, quick change.
20"x 10' Hamilton, rapid production.
20"x 10' Monarch, taper attachment.
24"x 24' Prentice, with raising block.
25"x 12' Sidney heavy duty.
28"x 8' Bridgeford, heavy duty.
8x40" & 10x72" Fitchburg Lo-Swing.

TURRET LATHES and SCREW MACHINES

No. 4 Defiance hand screw machine.
No. 4 Woods Tilted Turret, (2).
14" Milholland.
2x24 and 3x36 J. & L.

No. 3-B Foster, 5" capacity, new.
Warner & Swasey No. 2.
Warner & Swasey No. 4.
Nos. 52 & 56 National Acme auto.

SHAPERS

14" Niles, traveling head.
14" Steptoe, crank.
16" American, tool room.

16" American b. g. crank.
16" O. & S. b. g. crank, new.
24" O. & S. back geared crank.

The Entire Plant of the Columbus Machine Company. Ask for List.

PRESSES

No. 3-A Willard-A inclinable.
No. 1 Toledo inclinable.
Nos. 14, 2, 24 & 4 Robinson.

Emco, bench, for radio parts.
No. 85 Niagara straight side.
Perkins, dbl. housing, wt. 4,000 lbs.

DRILLS and RADIALS

3' Cinti-Bickford, sgl. pul., gear box.
34' Silver, sgl. pullev, gear box dr.
4' Universal Radial Drill Co. plain.
Electric drills, Black & Decker.

22", 24", 26", 28" and 32", sliding hd.
20"-24" & 26" Barnes, all geared.
4-spindle Reed sensitive.
Electric drills, Thor, all sizes.

MILLING MACHINES

No. 1 Kempsmith universal.
No. 2 Kempsmith universal.
No. 2 Kempsmith plain.
No. 25 Becker plain, power feed.
No. 3 Kempsmith univ. and plain.

No. 3 LeBlond, with vertical attach.
No. 2 H Brown & Sharpe plain.
Briggs type "A" high duty. 24x8 table.
No. 7 Becker Lincoln type.
Oesterlein 24x7x18 plain.

GRINDERS

Nos. 1 & 78 W. & M. surface.
No. 2 W. & P. 10x30 universal.
6"x 15" Fitchburg plain.
12x36 Cincinnati universal.
12x42" & 16"x 30" Landis plain.
36" and 66" Yates plate.
Perfection cylinder.

No. 60 Heald cylinder.
Schmitt cylinder grinder.
No. 3 Ohio universal & tool.
No. 4 Gardner 20" double disc.
No. 20 Bryant, chucking.
Capital internal, new, 2"x2".

MISCELLANEOUS

Band saw, metal, Klemm.
Band saws, Napier 4"x4", 10"x10".
Bending rolls, 7' for 8" plate.
Boring mill, Colburn No. 3, tur. hd.
Boring mill, 54" & 60" Colburn, 2 hds.
Brake, 10', 18-gauge metal.
Broaching machine, No. 1 LaPointe.
Broaching machine, No. 3 LaPointe.
Compressors, 6x6, 8x8 and 12x10.
Drawing tables, adjust., 42"x6' top.
Gear cutter, 26" No. 3 B. & S.
Gear millers, Bilton No. 1, (5).
Hammer, 40 lb. Bradley, helve.
Hammer, 150 lb. Standard drop.

Oil separator, Springfield.
Pipe machines, 2", 4" & 6".
Pumps, Gould triplex, 6x8" & 7x9".
Punch & shear 1/2 by 1/2, 10" throat.
Riveting hammers, type B, Nos. 2, 3, 4 & 5-A.
Scale, 1500 lb. Toledo, dial type.
Sceleroscope, Shore.
Shear, No. 296 Robinson, 14 ga., 5' Shear, No. 362 Robinson.
Shear, No. 20 Quickwork, 30" throat.
Shear, circular, Pettingell 60".
Tapping machine, Acme 6-spindle.
Threading mche., W. & P. 2-spindle.

OSBORNE & SEXTON
MACHINERY COMPANY
COLUMBUS OHIO

DEPT. H.

Classified Finding Index

Air Guns

Powell Co., Wm., Cincinnati

Angle Plates

Germanow-Simon Mch. Co., Rochester, N. Y.

Arbors, Solid

Nicholson & Co., W. H., Wilkes-Barre, Pa.

Auto-Gages For Dies

Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Automatics

National Acme Company, Cleveland, O.
New Britain Mch. Co., New Britain, Conn.

Balancing Ways

Anderson Bros. Mfg. Co., Rockford, Ill.
Rowsher Co., N. P., South Bend, Ind.

Balls, Bearing and Burnishing

Abbott Ball Co., Hartford, Conn.

Band Saw Machines, for Metal

Armstrong Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Porter-Cable Machine Co., Syracuse, N. Y.

Barrels, Tumbling

Abbott Ball Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago

Belt Shifters

Artisan Mfg. Co., Cincinnati, O.

Bench Legs, Steel

New Britain Mch. Co., New Britain, Conn.

Bending Machines, Hand and Power

Armstrong Blum Mfg. Co., 341 N. Francisco Ave., Chicago
Hendley & Whittemore Co., Beloit, Wis.
Lewthwaite Mch. Co., T. H. 417 E. 31st, N. Y.
Lourie Hydraulic Co., Springfield, Ill.
Pedrick Tool & Machine Co., Philadelphia

Bending Rolls

Hendley & Whittemore Co., Beloit, Wis.

Bolt and Nut Machinery

Economy Engineering Co., Willoughby, O.
Foote-Burt Co., Cleveland, O.

Boring Bars

Pedrick Tool & Machine Co., Philadelphia

Boring Bars, Cylinder

Pedrick Tool & Machine Co., Philadelphia

Boring, Drilling & Milling Machines

Landis Tool Co., Waynesboro, Pa.

Boring Machines, Horizontal

Avery Drilling Machine Co., Cincinnati
Pedrick Tool & Machine Co., Philadelphia
Rockford Drilling Machine Co., Rockford, Ill.

Boring Tools

Maxwell Products Co., Cleveland, Ohio.

Boring and Turning Machines, Vertical

Cincinnati Planer Co., Cincinnati, Ohio

Burnishing Equipment, Ball

Abbott Ball Co., Elmwood, Conn.

Case-Hardening Compound

Kasenit Company, 2 & 4 Stone St., New York

Centers, Tailstock

Kell Manufacturing Co., Newark, N. J.

Chucking Machines

National Acme Company, Cleveland, O.
New Britain Mch. Co., New Britain, Conn.
Springfield Machine Tool Co., Springfield, O.

Chucks, Collet

Ames Co., B. C., Waltham, Mass.
Hardinge Brothers, Inc., 1770 Bertrout Ave., Chicago

Chucks, Drill

Eastern Tube & Tool Co., Inc., 580 Johnson Ave., Brooklyn, N. Y.
Jacobs Mfg. Co., Hartford, Conn.
Scully-Jones & Co., 2012 W. 13th, Chicago
Titan Tool Co., Erie, Pa.

Chucks, Drill and Tap

Scully-Jones & Co., 2012 W. 13th, Chicago

Chucks, Keyway Cutting

Scully-Jones & Co., Ry. Exch. Bldg., Chicago

Chucks, Magnetic

J. & H. Electric Co., Providence, R. I.

Clamps, Die

Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Clutches, Friction

Conway Clutch Co., Cincinnati, O.
Edgemont Machine Co., Dayton, O.

Cold Saws

Burke Machine Tool Co., Connaught, Ohio

Colllets

Ames Co., B. C., Waltham, Mass.
Hardinge Brothers, Inc., 1770 Bertrout Ave., Chicago

Contract Work Wanted

Burke Machine Tool Co., Connaught, O.

Counterbores and Spot Facers

Glenzer Co., J. C., Detroit, Mich.

Couplings, Friction Clutch

Conway Clutch Co., Cincinnati, O.

Cranes, Portable

Candey-Otto Mfg. Co., Chicago Heights, Ill.
Canton Foundry & Mch. Co., Canton, Ohio

Crank Pin Turning Machine

Pedrick Tool & Machine Co., Philadelphia

Cutters, Keyseating

Davis Keyseater Co., Rochester, N. Y.
Scully-Jones & Co., 2012 W. 13th, Chicago

Cutters, Milling

Genesee Mfg. Co., Rochester, N. Y.

Cylinder Boring Machines, Portable

Pedrick Tool & Machine Co., Philadelphia

Demagnetizers

J. & H. Electric Co., Providence, R. I.

Dial Indicators

Federal Products Corp'n, Providence, R. I.

Die Heads, Threading, Self Opening

National Acme Company, Cleveland, O.

Die Sets

Danly Machine Specialties, Inc., 4913 Lincoln Ave., Chicago

Drill Racks

Peerless Machine Co., Racine, Wis.

Classified Finding Index

Drilling Machine Heads, Multiple
United States Drill Head Co., Cincinnati

Drilling Machines, Bench
Ames Co., B. C., Waltham, Mass.
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Cincinnati, Ohio
Candey-Otto Mfg. Co., Chicago Heights, Ill.
Rockford Drilling Machine Co., Rockford, Ill.
Sigmourney Tool Co., Hartford, Conn.
Winterhoff Tool & Machine Co., Elkhart, Ind.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Horizontal
Rockford Drilling Machine Co., Rockford, Ill.

Drilling Machines, Multiple Spindle
Avey Drilling Machine Co., Cincinnati
Foote-Hurt Co., Cleveland, O.
Rockford Drilling Machine Co., Rockford, Ill.
Sigmourney Tool Co., Hartford, Conn.
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Portable Electric
Independent Pneumatic Tool Co., 800 W.
Jackson Blvd., Chicago
Stow Flexible Shaft Co., Philadelphia, Pa.
Strand Co., N. A., 5001 N. Lincoln St., Chicago
Winterhoff Tool & Machine Co., Elkhart, Ind.
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Post
Candey-Otto Mfg. Co., Chicago Heights, Ill.
Mueller Machine Tool Co., Cincinnati

Drilling Machines, Radial
Candey-Otto Mfg. Co., Chicago Heights, Ill.
Mueller Machine Tool Co., Cincinnati
Taylor & Fenn Co., Hartford, Conn.

Drilling Machines, Sensitive
Avey Drilling Machine Co., Cincinnati
Burke Machine Tool Co., Cincinnati, Ohio
Candey-Otto Mfg. Co., Chicago Heights, Ill.
Foote-Hurt Co., Cleveland, O.
Leland-Gifford Co., Worcester, Mass.
Muehlmann, Adolph, Cincinnati, O.
Sigmourney Tool Co., Hartford, Conn.
Taylor & Fenn Co., Hartford, Conn.
U. S. Machine Tool Co., Cincinnati, O.
Wisconsin Electric Co., Racine, Wis.

Drilling Machines, Vertical
Avey Drilling Machine Co., Cincinnati
Candey-Otto Mfg. Co., Chicago Heights, Ill.
Foote-Hurt Co., Cleveland, O.
Leland-Gifford Co., Worcester, Mass.
Rockford Drilling Machine Co., Rockford, Ill.
Sigmourney Tool Co., Hartford, Conn.
Taylor & Fenn Co., Hartford, Conn.

Drills, Twist
Cleveland Twist Drill Co., Cleveland, O.

Dust Handling Equipment
Knickerbocker Co., Jackson, Mich.

Emery Wheel Dressers and Cutters
Precision Truing Machine & Tool Co., Cincinnati, O.
Taylor & Fenn Co., Hartford, Conn.
Western Tool & Mfg. Co., Springfield, O.

Feeders, Oil and Soda Water
New Britain Machine Co., New Britain, Conn.

Filing Machines, Die
Ames Co., B. C., Waltham, Mass.

Filing Machine Equipment
Wardwell Mfg. Co., Cleveland, O.

Flexible Shafts
Strand Co., N. A., 5001 N. Lincoln St., Chicago

Forges
Candey-Otto Mfg. Co., Chicago Heights, Ill.

Forgings, Hollow Bored
American Hollow Boring Co., Erie, Pa.

Furniture, Machine Shop
New Britain Machine Co., New Britain, Conn.
Western Tool & Mfg. Co., Springfield, O.

Gauges, Dial
Ames Co., B. C., Waltham, Mass.
Federal Products Corp'n, Providence, R. I.

Gauges, Piston and Piston Ring
Federal Products Corp'n, Providence, R. I.

Gauges, Thread
Federal Products Corp'n, Providence, R. I.

Gears
Boston Gear Works Sales Company, Norfolk
Downs, Mass.

Grinding Machines, Belt
Gallmeyer & Livingston Co., Grand Rapids,
Mich.
Peetles Surfacing Machine Co., Troy, N. Y.
Walls Sales Corp., 98 Warren St., New York

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Bedine Electric Co., 2256 W. Ohio St., Chicago
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Grinding Machines, Cutter, Reamer and Tool
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Mich.
Jarecki Mch. & T. Co., Grand Rapids, Mich.
Landis Tool Co., Waynesboro, Pa.
LeBlond Mch. Tool Co., B. K., Cincinnati, O.
Thompson Grinder Co., Springfield, Ohio
Wilmarth & Morman Co., Grand Rapids, Mich.

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Mich.
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Taylor & Fenn Co., Hartford, Conn.
Thompson Grinder Co., Springfield, Ohio
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Grinding Machines, Portable Electric
Bedine Electric Co., 2256 W. Ohio St., Chicago
Independent Pneumatic Tool Co., 800 W.
Jackson Blvd., Chicago
Porter Cable Machine Co., Syracuse, N. Y.
Service Tool, Die & Mfg. Co., 2256 Walnut
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 Morey and Co., Inc., 408 Broome St., N. Y.
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 Motch & Merryweather Machinery Company, Cleveland, O.
 Niles-Bement-Pond Co., 111 Broadway, N. Y.
 Norton-Broadway Mch. Co., Cincinnati, O.
 O'Brien Machinery Co., Philadelphia
 Oliver Chilled Plow Works, South Bend, Ind.
 Osborne & Sexton Machy. Co., Columbus, O.
 Priatt & Co., D. C., Cleveland, O.
 Penfield Axle Co., Peru, Ind.
 Peninsular Machinery Co., Detroit, Mich.
 Queen City Machine Tool Co., Cincinnati, O.
 Reeve-Fritts Co., 37 S. Desplaines, Chicago
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 Russell Machine Co., Pittsburgh, Pa.
 Saltzman, B. L., 624 W. Van Buren Street, Chicago
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 Smith Machinery Co., H. A., Syracuse, N. Y.
 Star Foundry Co., Albert Lea, Minn.
 Stocker-Rumely-Wachs Co., 117 N. Jefferson St., Chicago
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 Smith & Mills Co., Cincinnati
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 Lewthwaite Machine Co., T. H., 417 E. 31st St., New York
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Hendley & Whittemore Co., Beloit, Wis.

Slotting Machines

Rhodes Mfg. Co., Hartford, Conn.

Spacing Washers

Detroit Stamping Co., Detroit, Mich.

Stools and Chairs, Factory

Chicago Wire Chair Co., 619 N. La Salle St., Chicago

Straightening Machines

Springfield Machine Tool Co., Springfield, O.
 Towley Mfg. Co., John T., Cincinnati
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Tap Extractors

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Tapping Machines and Attachments

Alto Mfg. Co., 1647 Wolfram St., Chicago
 Avey Drilling Machine Co., Cincinnati
 Burke Machine Tool Co., Conneaut, Ohio
 Eastern Tube & Tool Co., Inc., 580 Johnson Ave., Brooklyn, N. Y.
 Leland-Gifford Co., Worcester, Mass.
 Whitney Metal Tool Co., Rockford, Ill.

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Armstrong Bros. Tool Co., 308 N. Francisco Av., Chicago

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Others have said it—
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**W. & M.
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Grinds 11" high
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